

**Genome, Epigenome, and Environment Determine the Set
of All Possible Motivated Behaviors.**

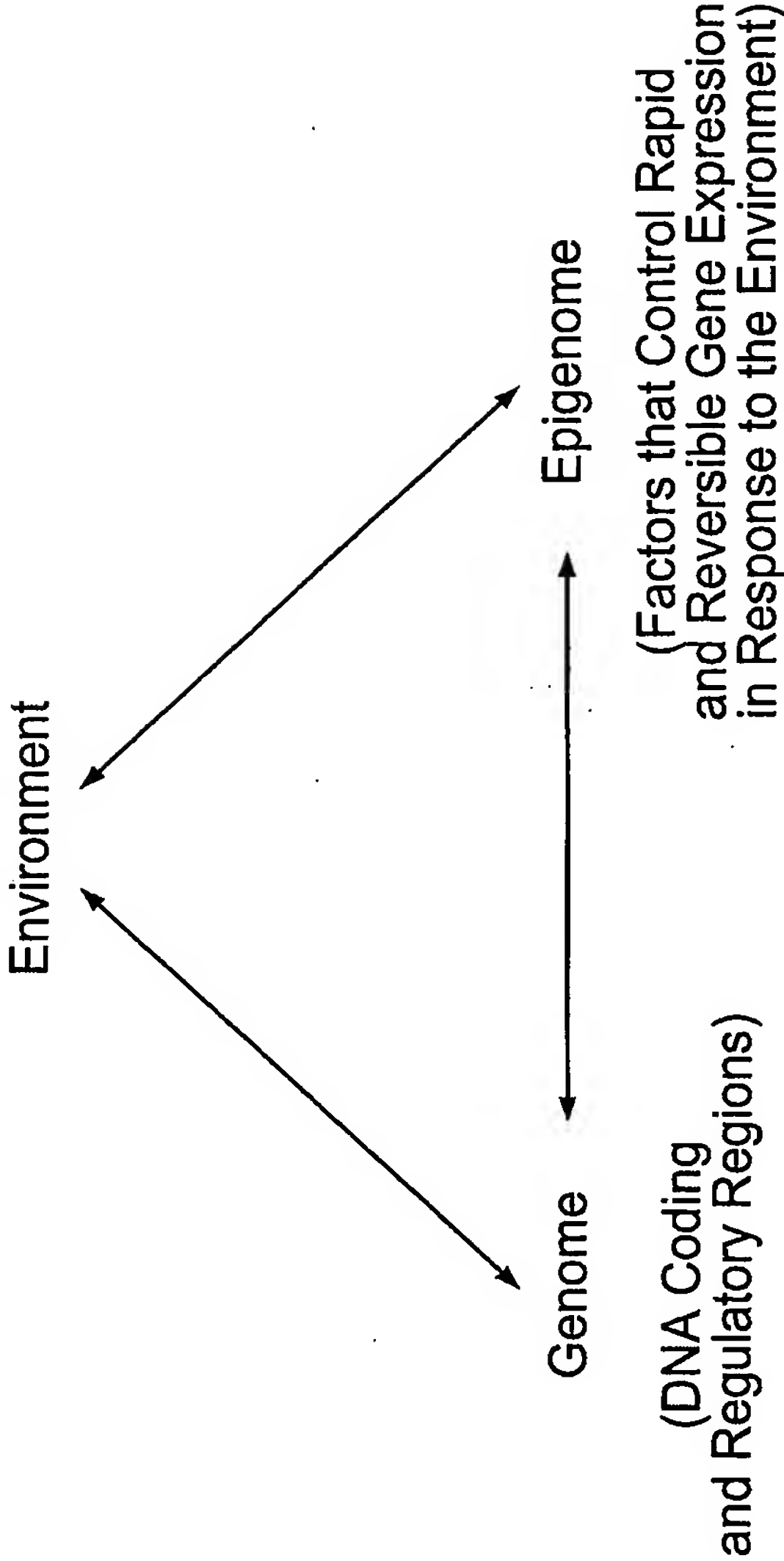


FIG. 1

**Systems Biology Acts as an Interface Between
the Environment and Genome/Epigenome.**

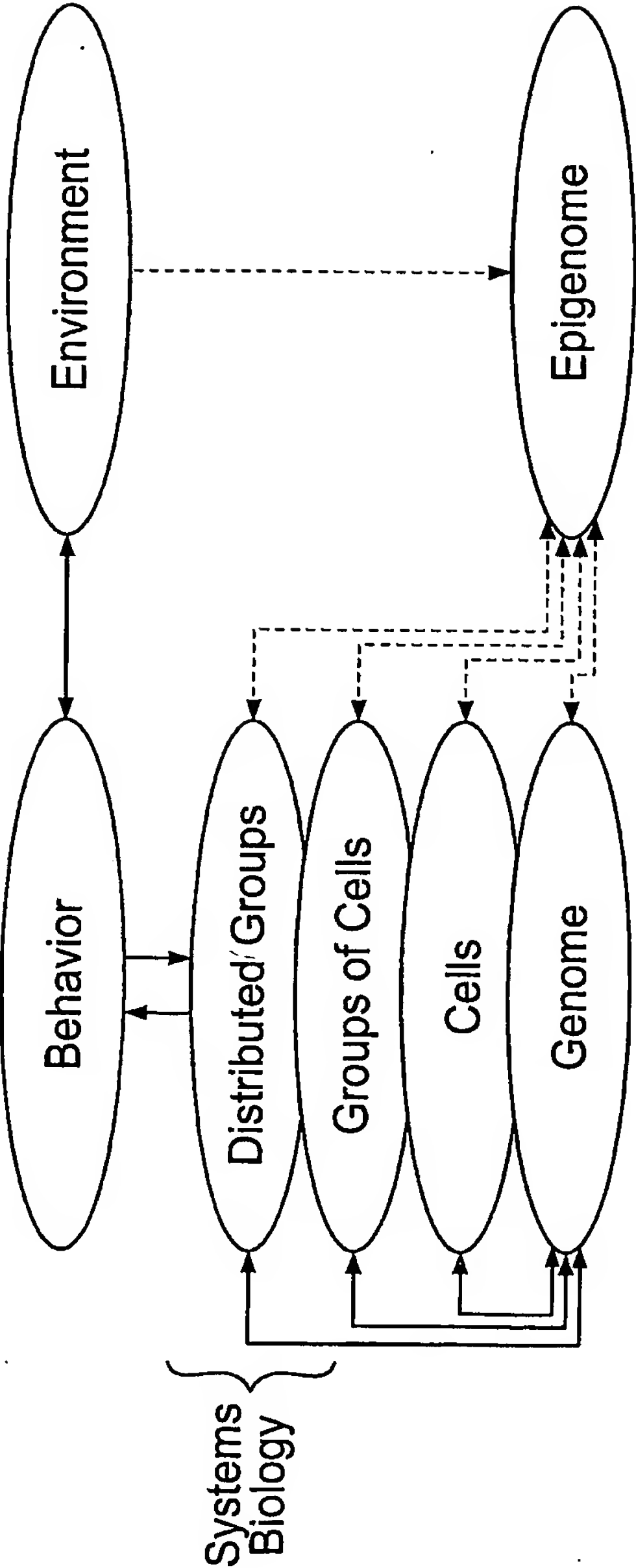


FIG. 2

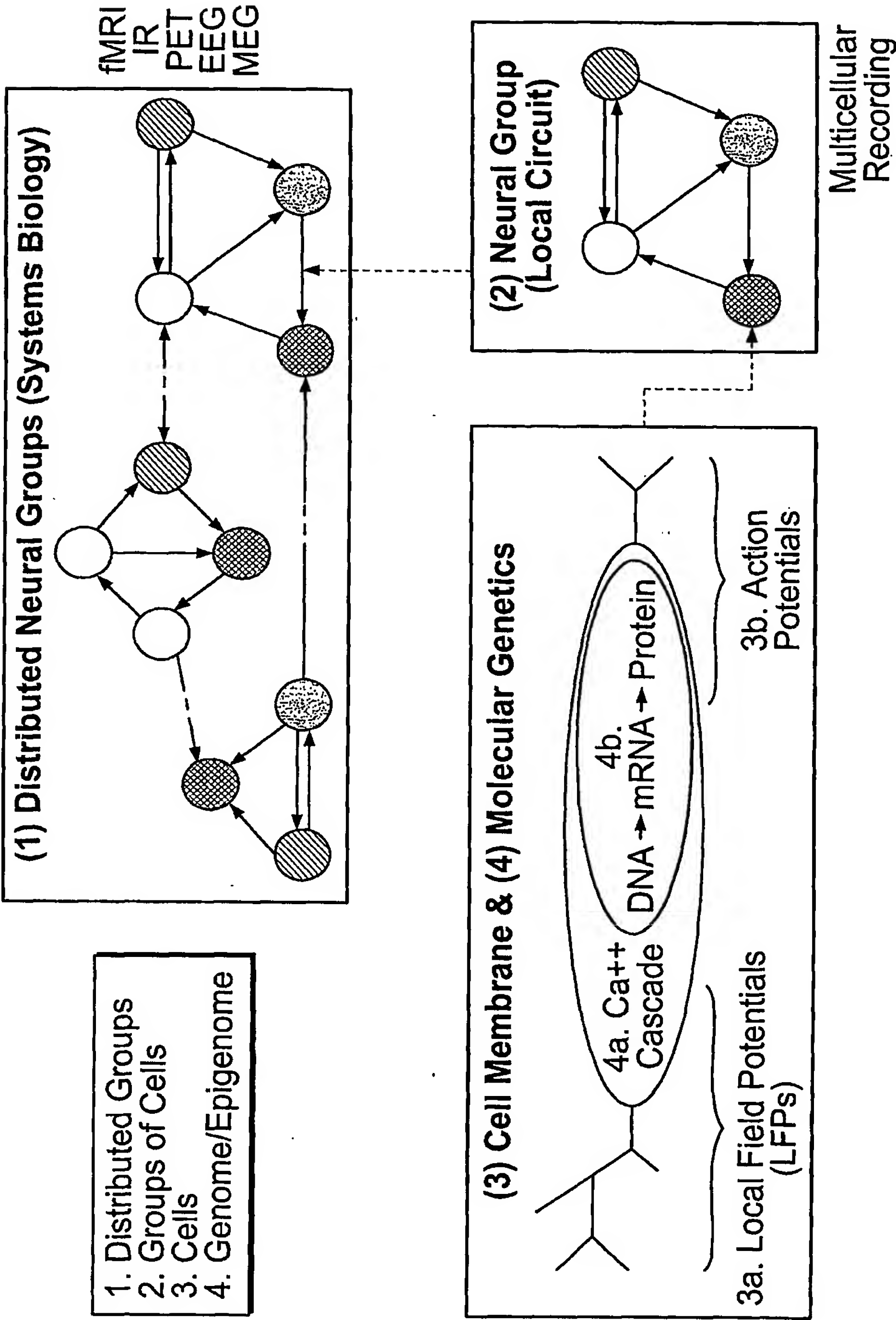


FIG. 3

Cognitive Physiology Model

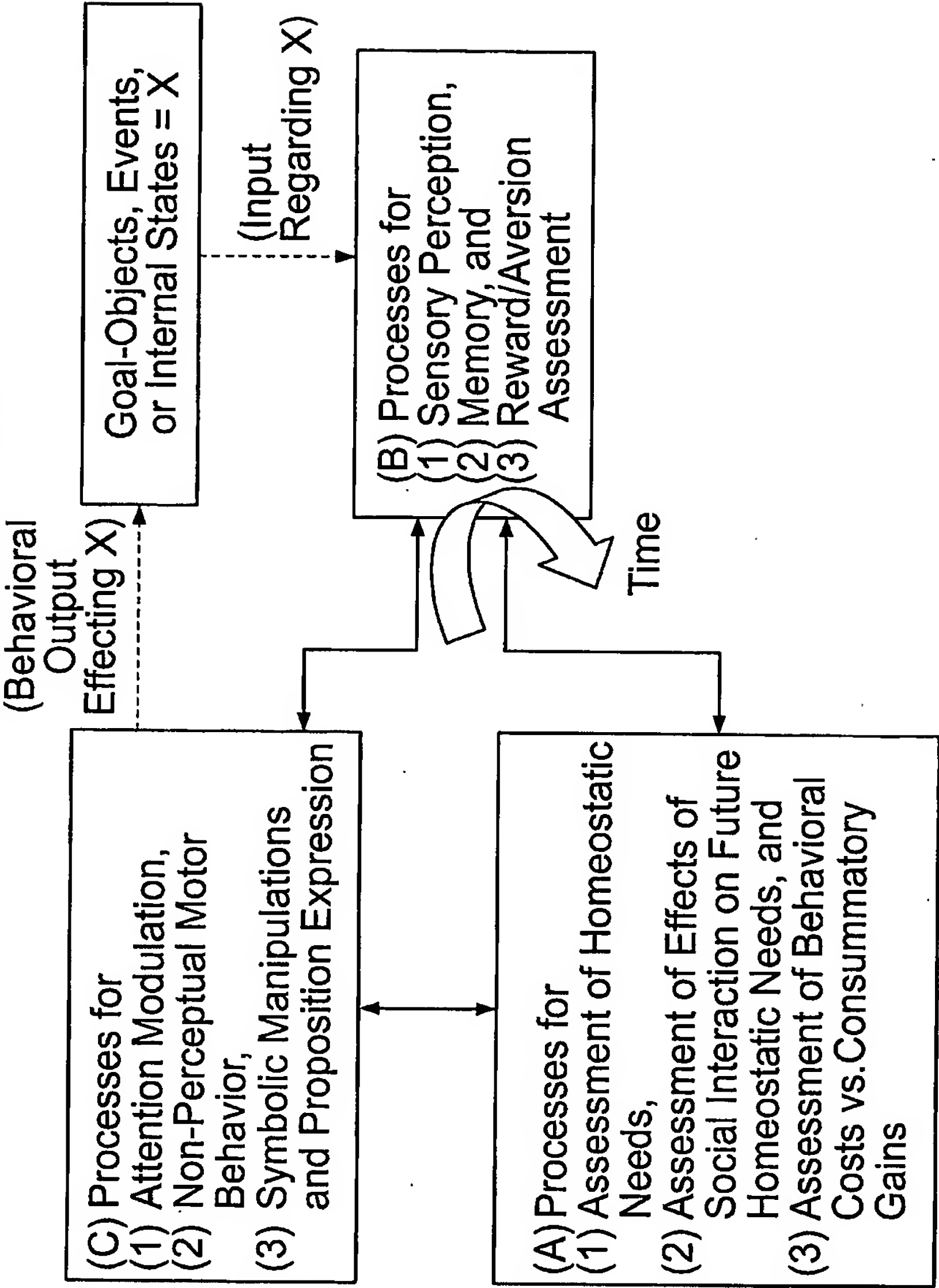


FIG. 4A

Communication Theory Model

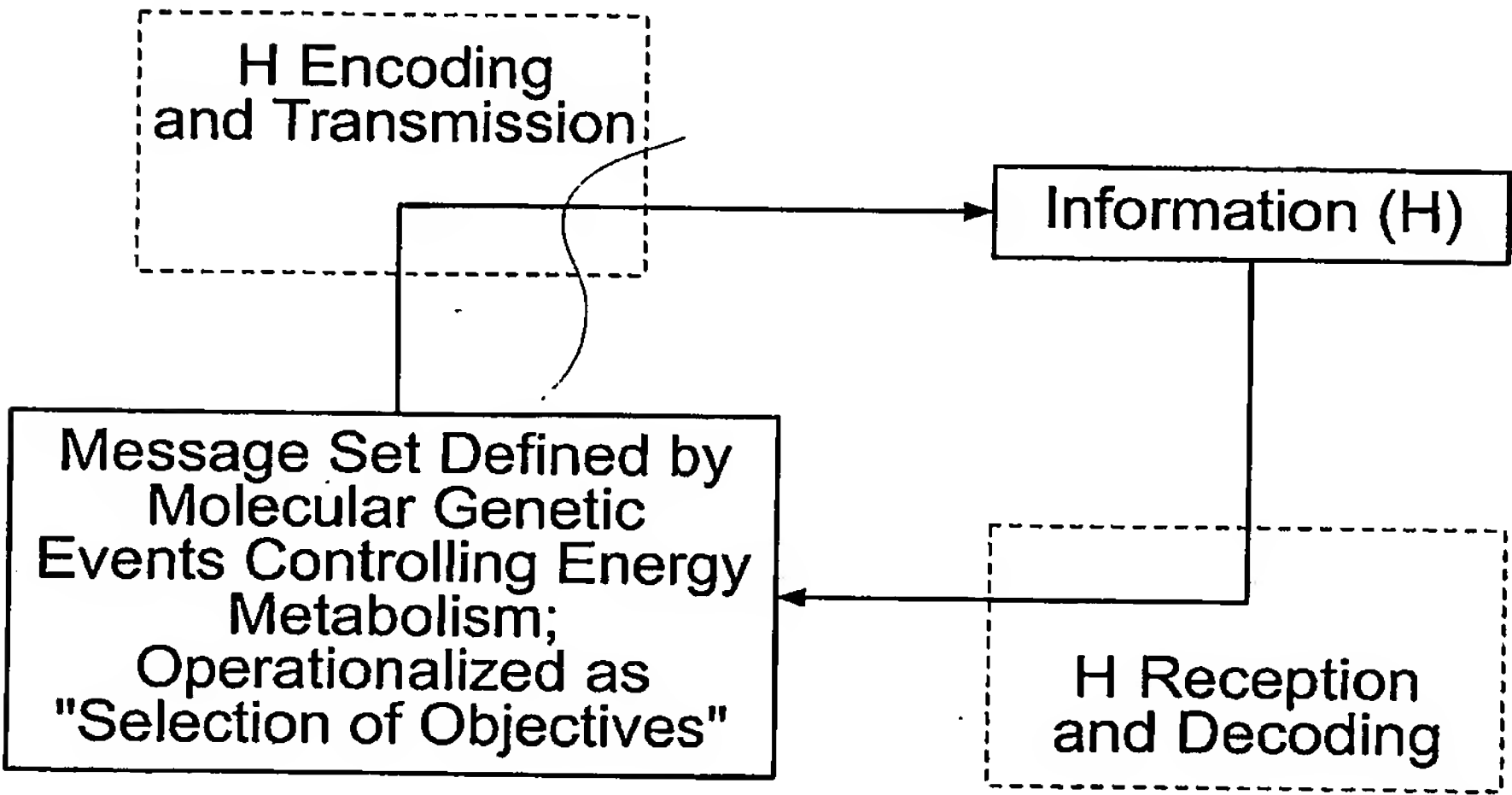


FIG. 4B

Combined Model

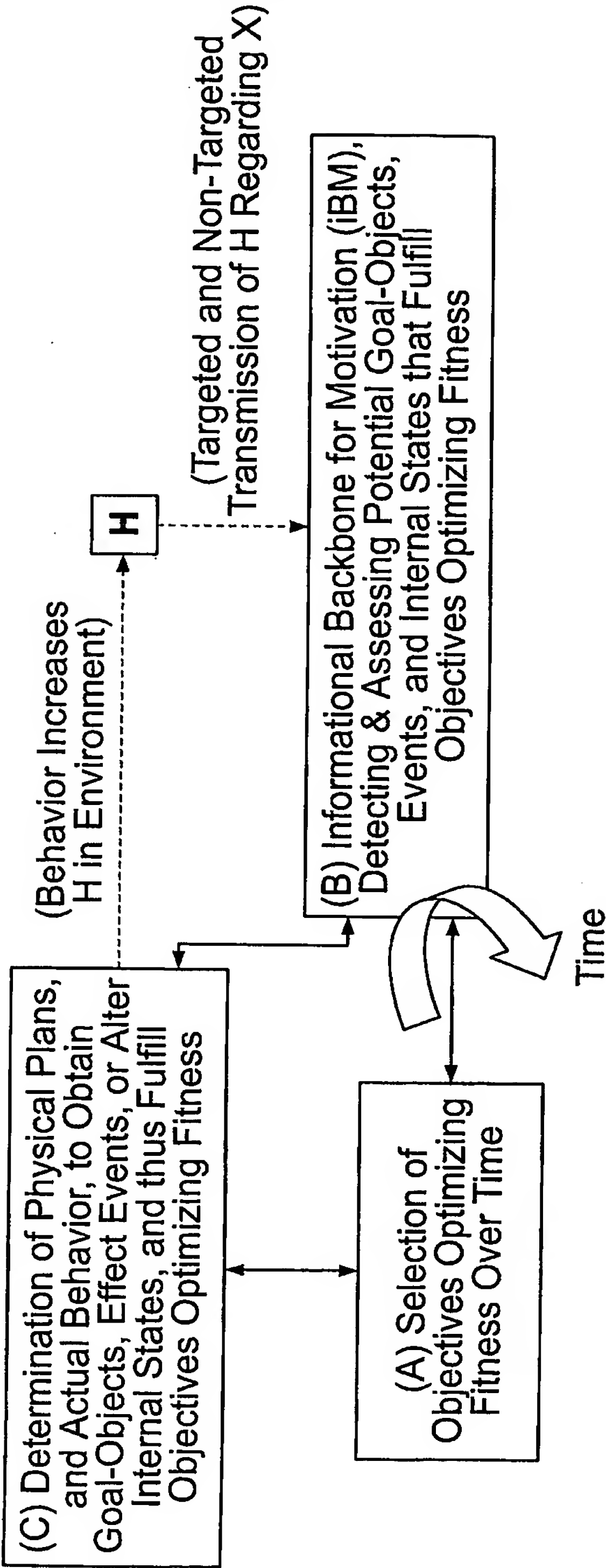


FIG. 4C

The Informational Backbone for Motivation (IBM)

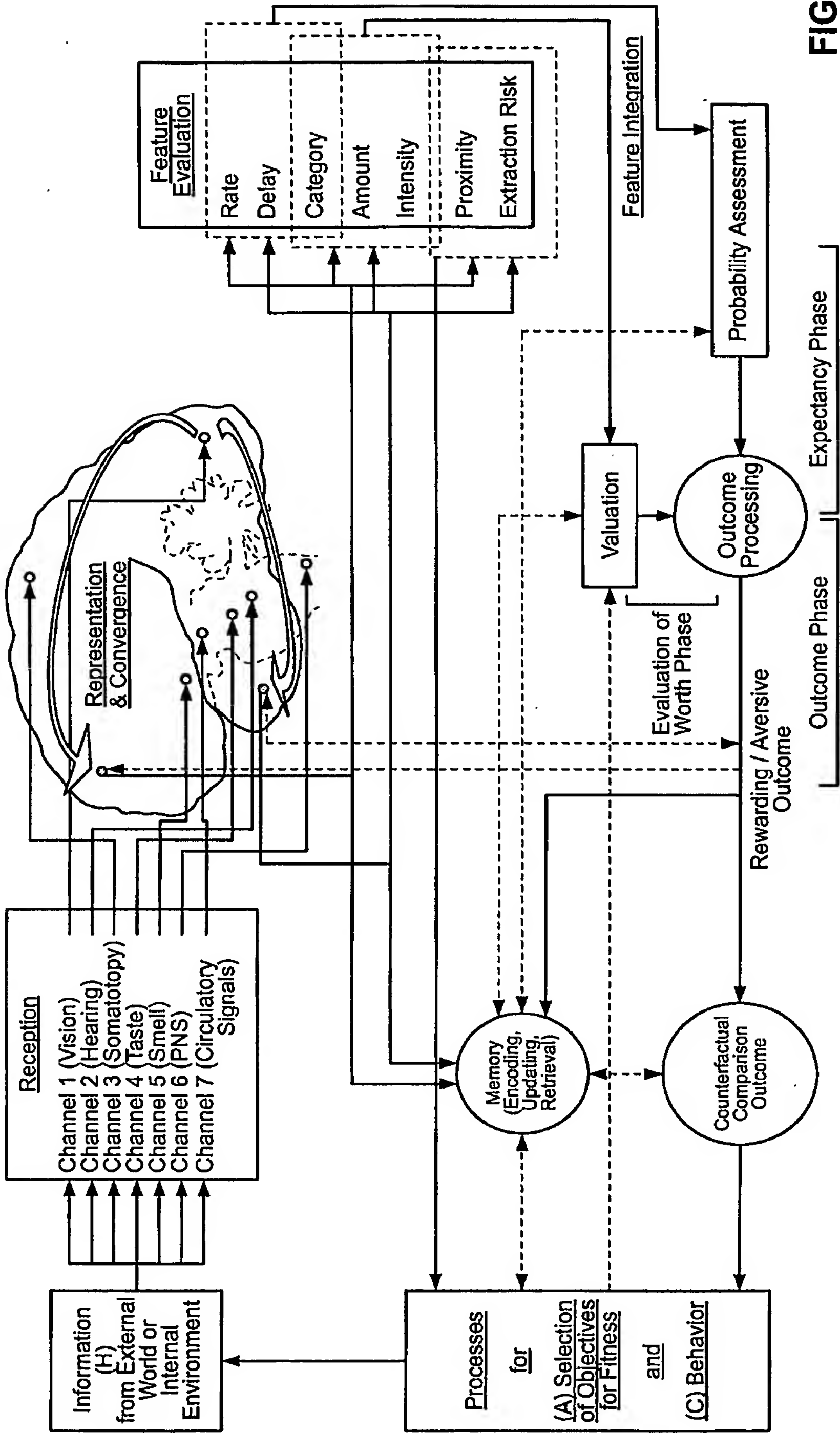


FIG. 5

Dissection of Combined Model
(a) Combined Model for Motivation:

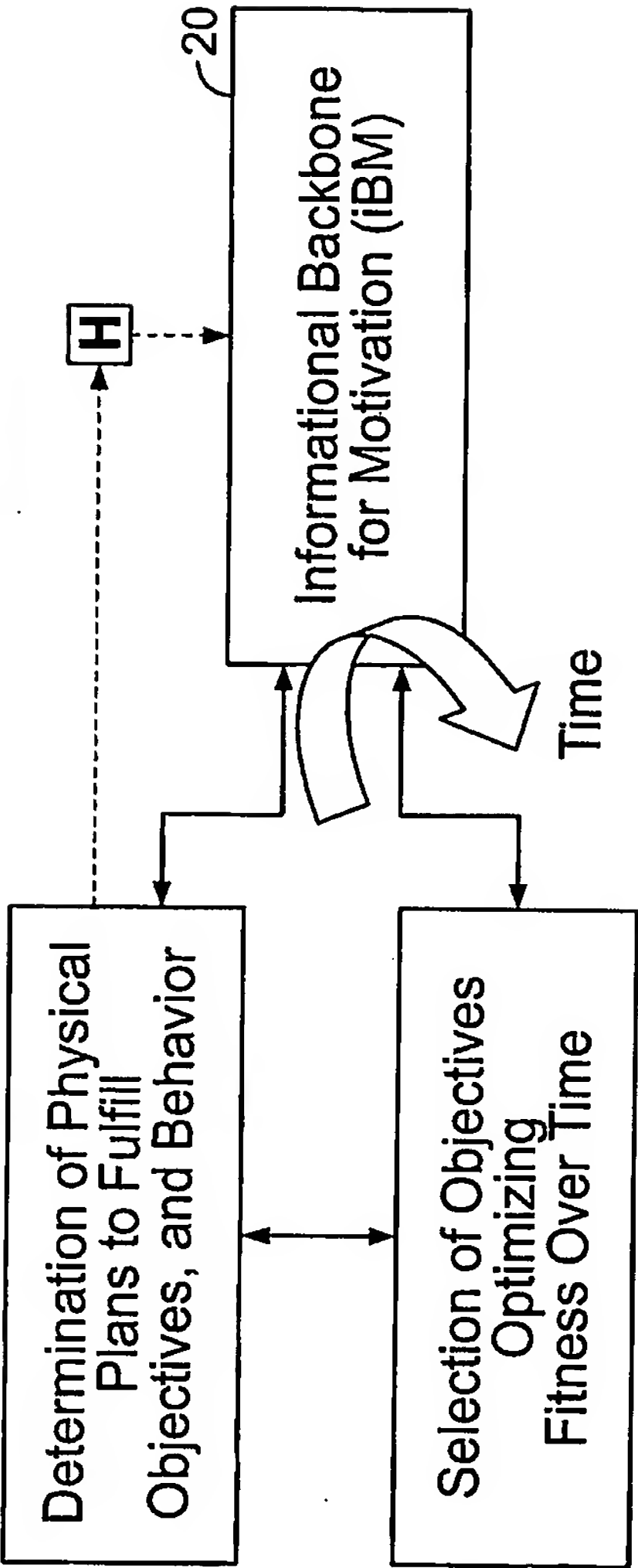
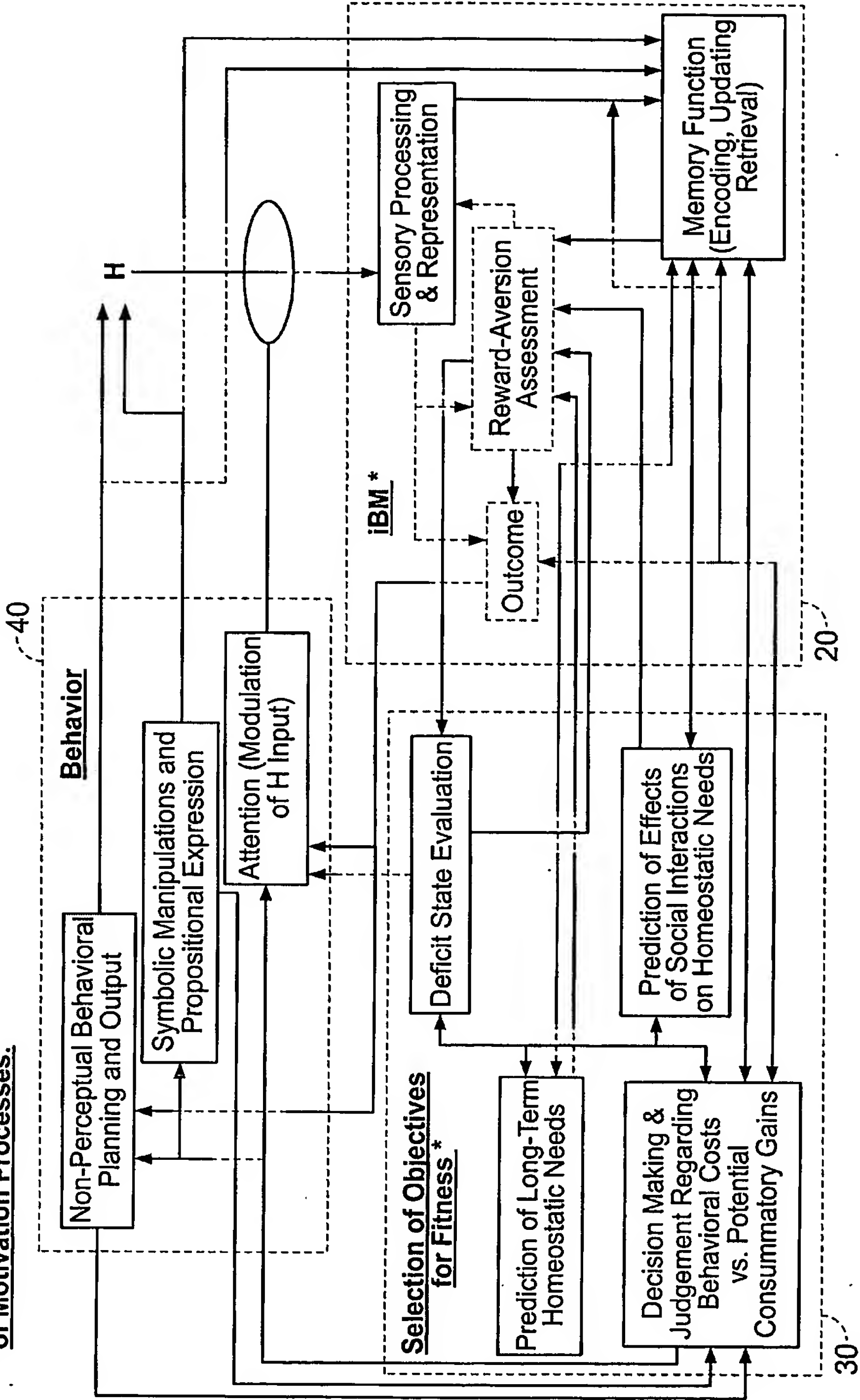
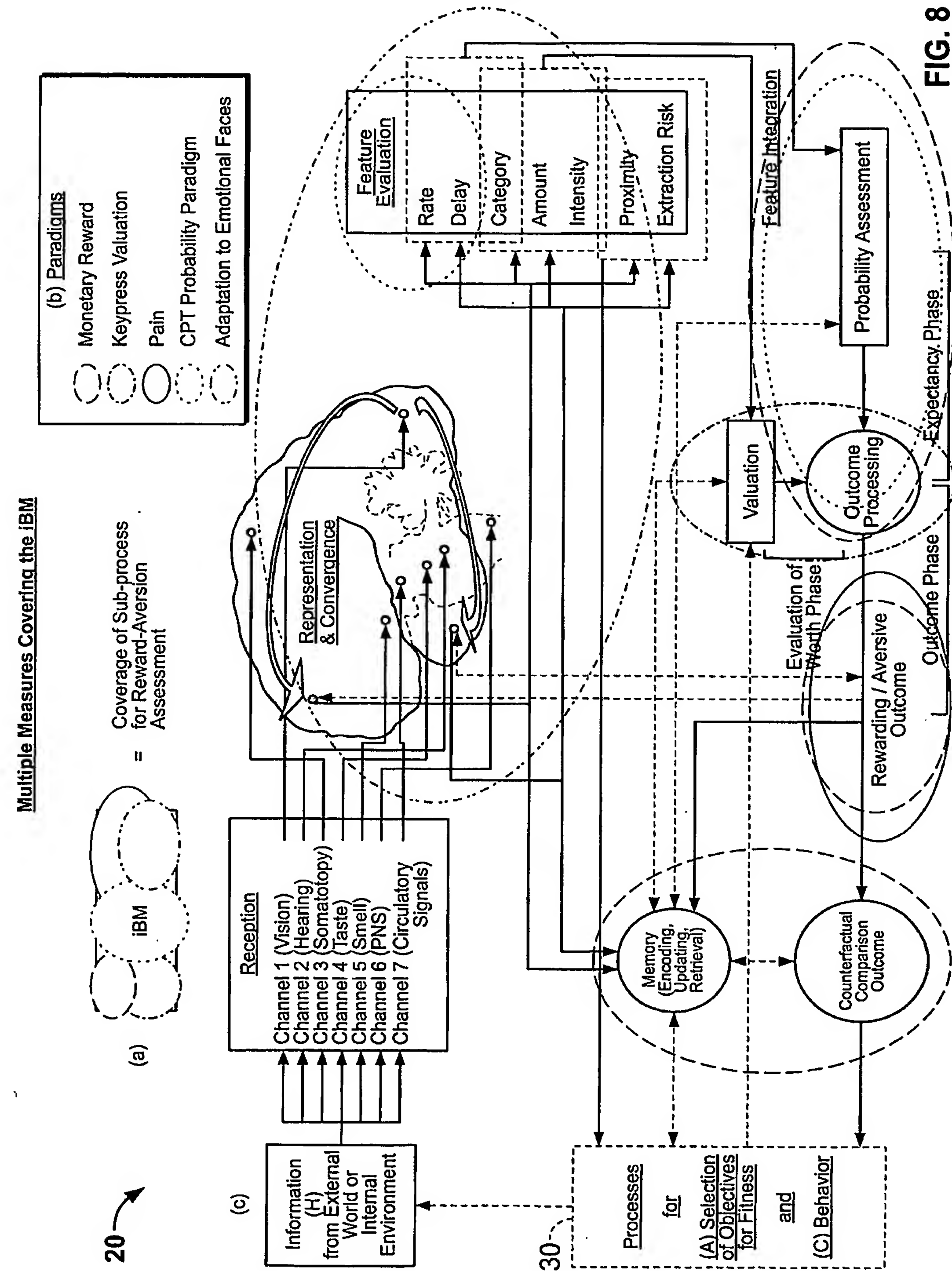


FIG. 6

Dissection of Combined Model
(b) Potential Dissection
of Motivation Processes:





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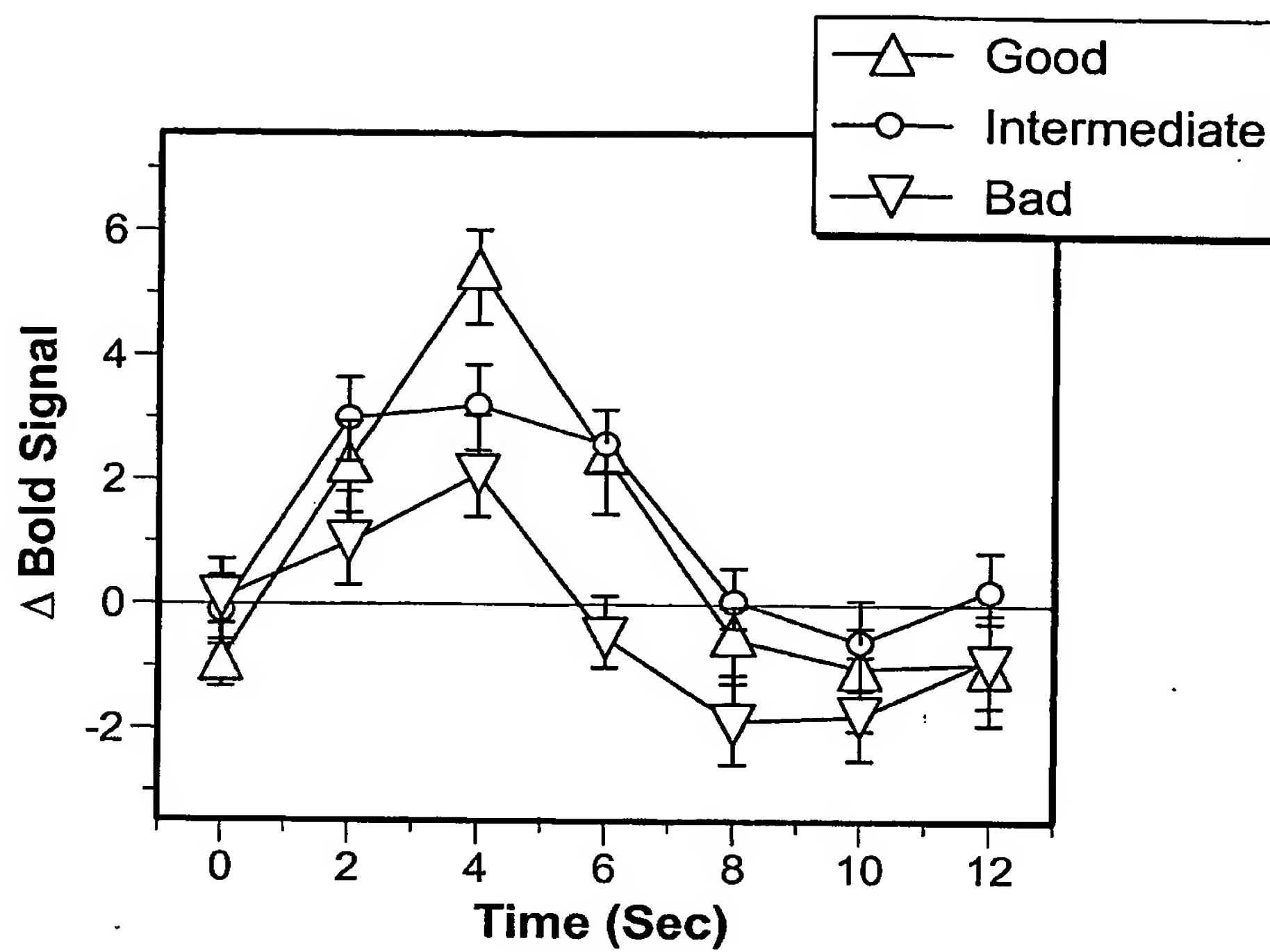


FIG. 9A

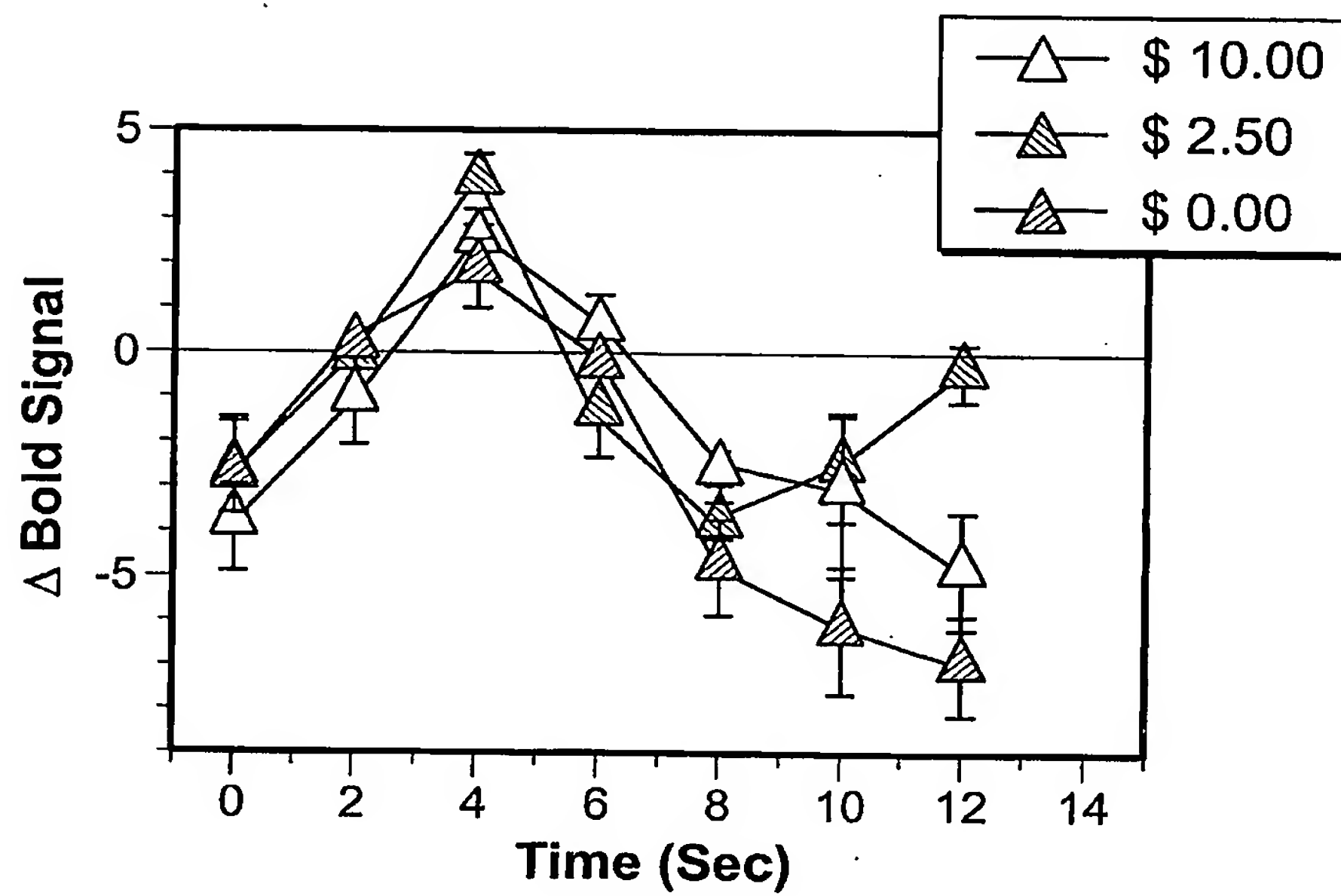


FIG. 9B

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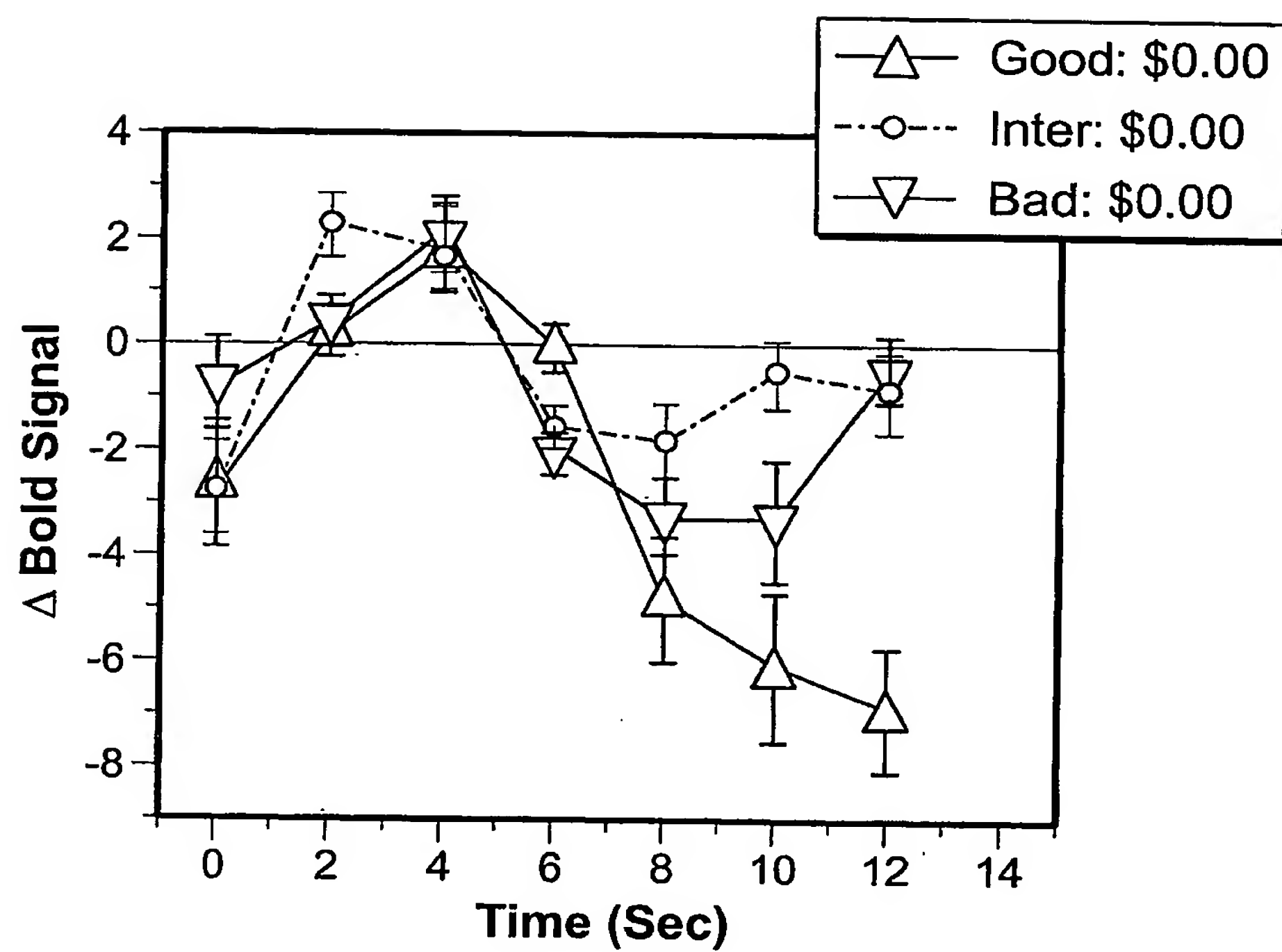


FIG. 9C

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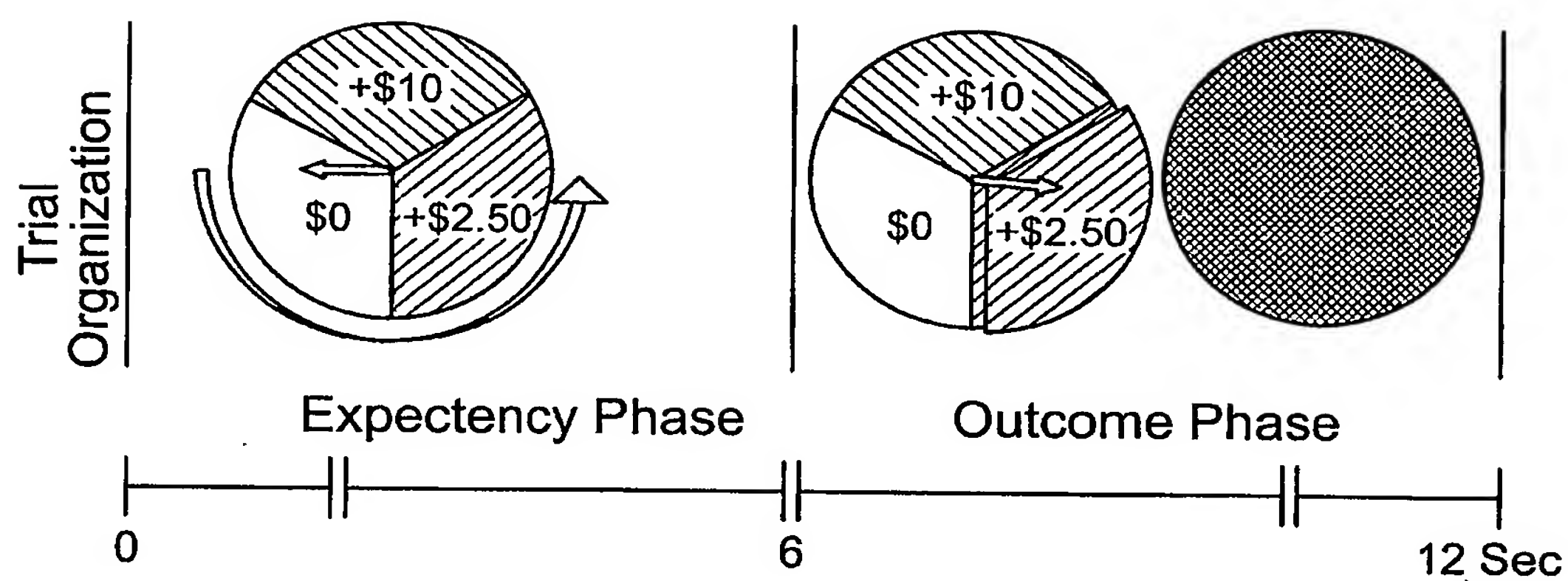


FIG. 9D

3 Types of Spinner

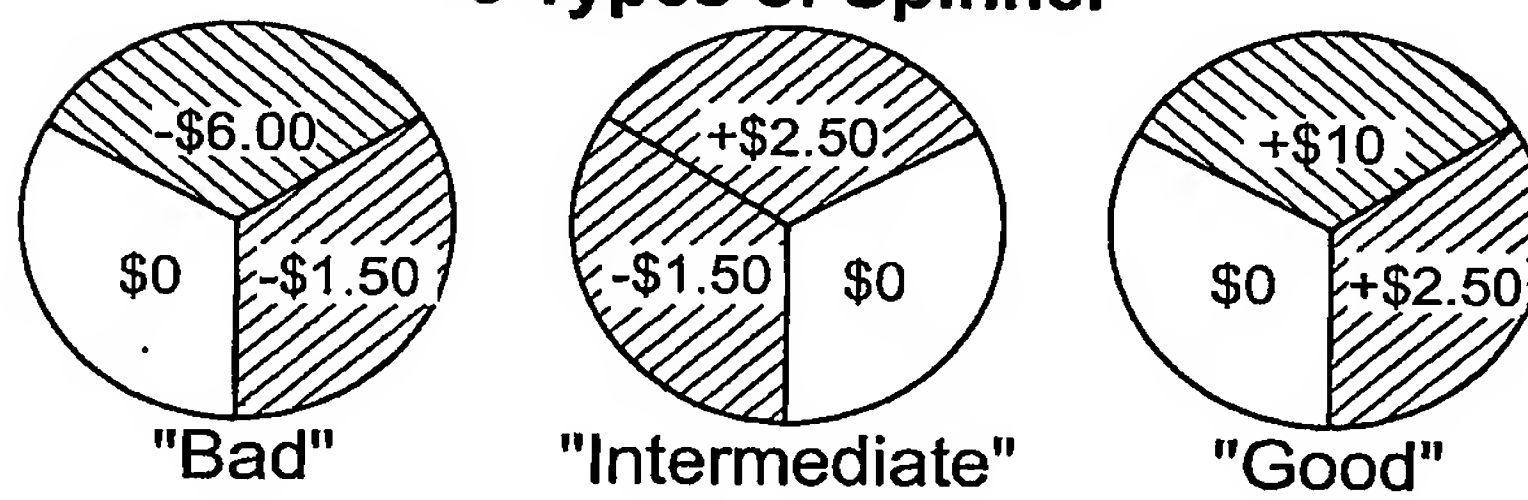
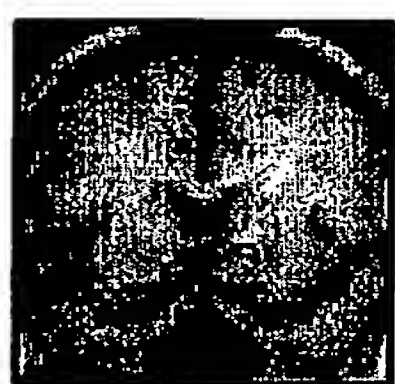


FIG. 9E

Expectancy			Outcomes				
Region	Cocaine	Monetary Reward	Region	Cocaine	Monetary Reward	Beauty	Pain
GOB	R		GOB	(1) X	(2)	(+) (-)	(+) (-)
	L			X	X ³	(X ²)	X ²
NAC	X ²	X ²	NAC	X	X ³		
	X	X		X	X	X (X)	X
	X	X		X		X	X
SLEA	R	X	SLEA	(X) X	X	(X)	X
	L			X		X	
Amygdala	R		Amygdala	(X) X	X		
	L	X		X	X	(X)	(X)
	R			X	X		
VT	R		VT	X	X		X
	L			X	X	(X)	X

FIG. 10A

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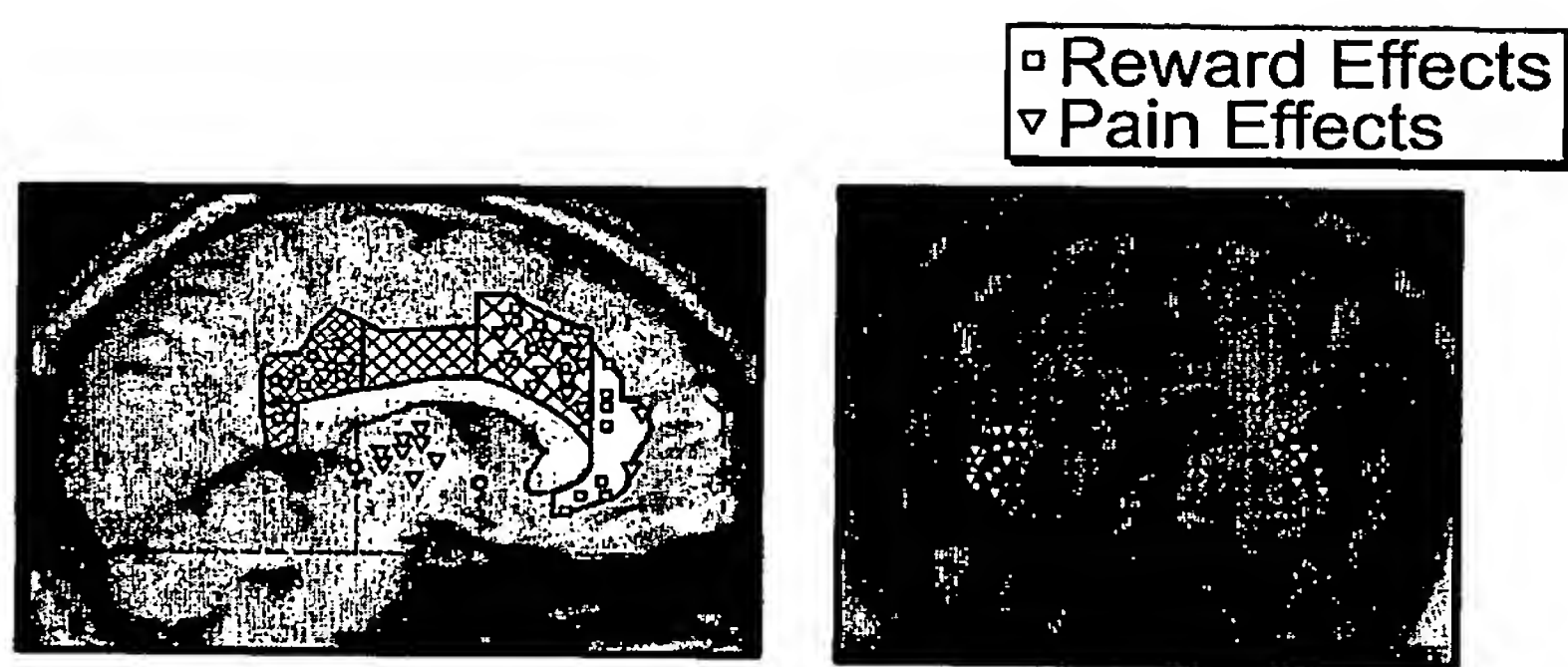
Monetary
Expectancy



Cocaine
Expectancy

FIG. 10B

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Reward and Pain in aCG, INS, Thal

FIG. 10C

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Consolidated Reward Studies in Healthy Subjects

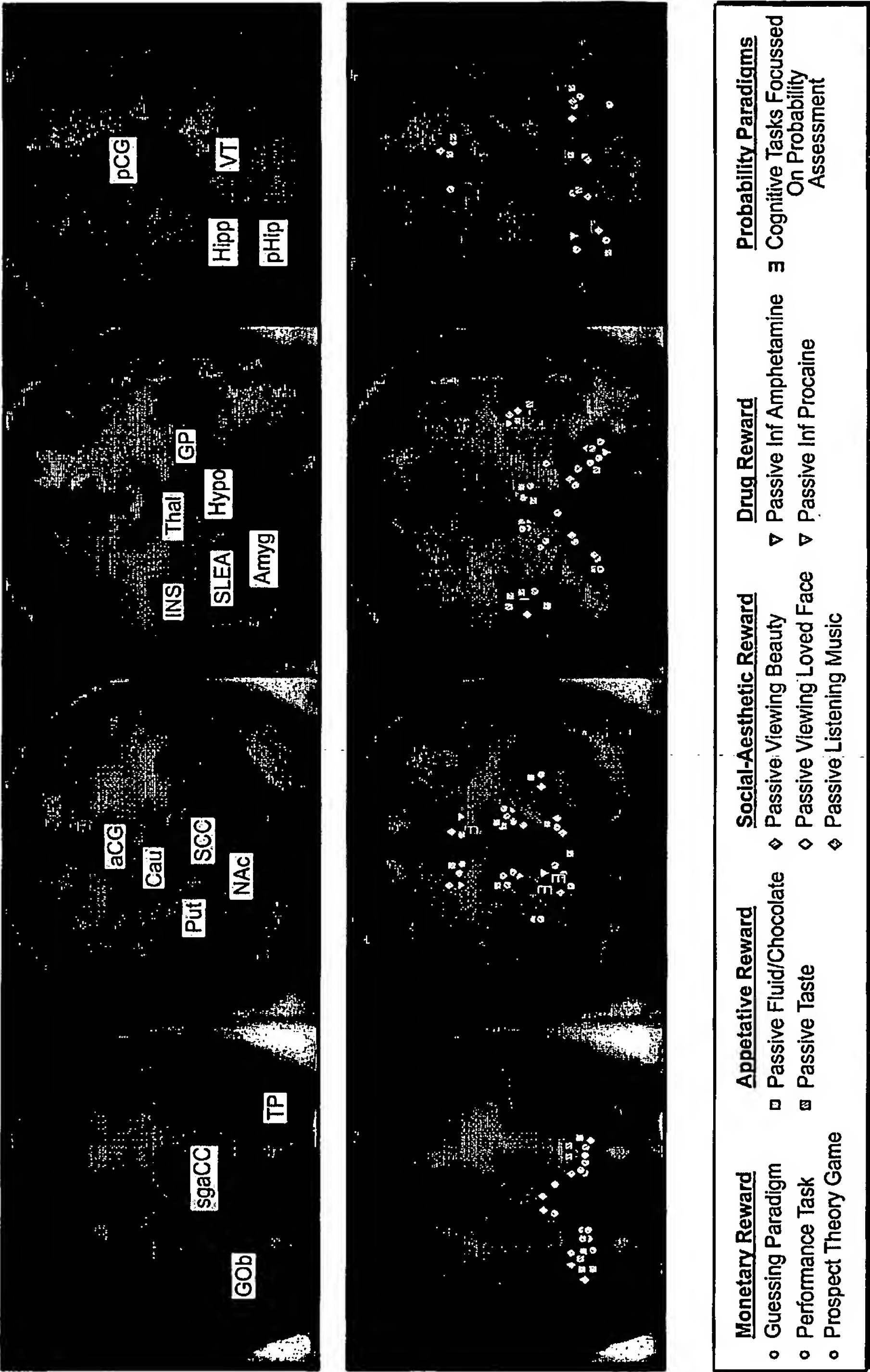
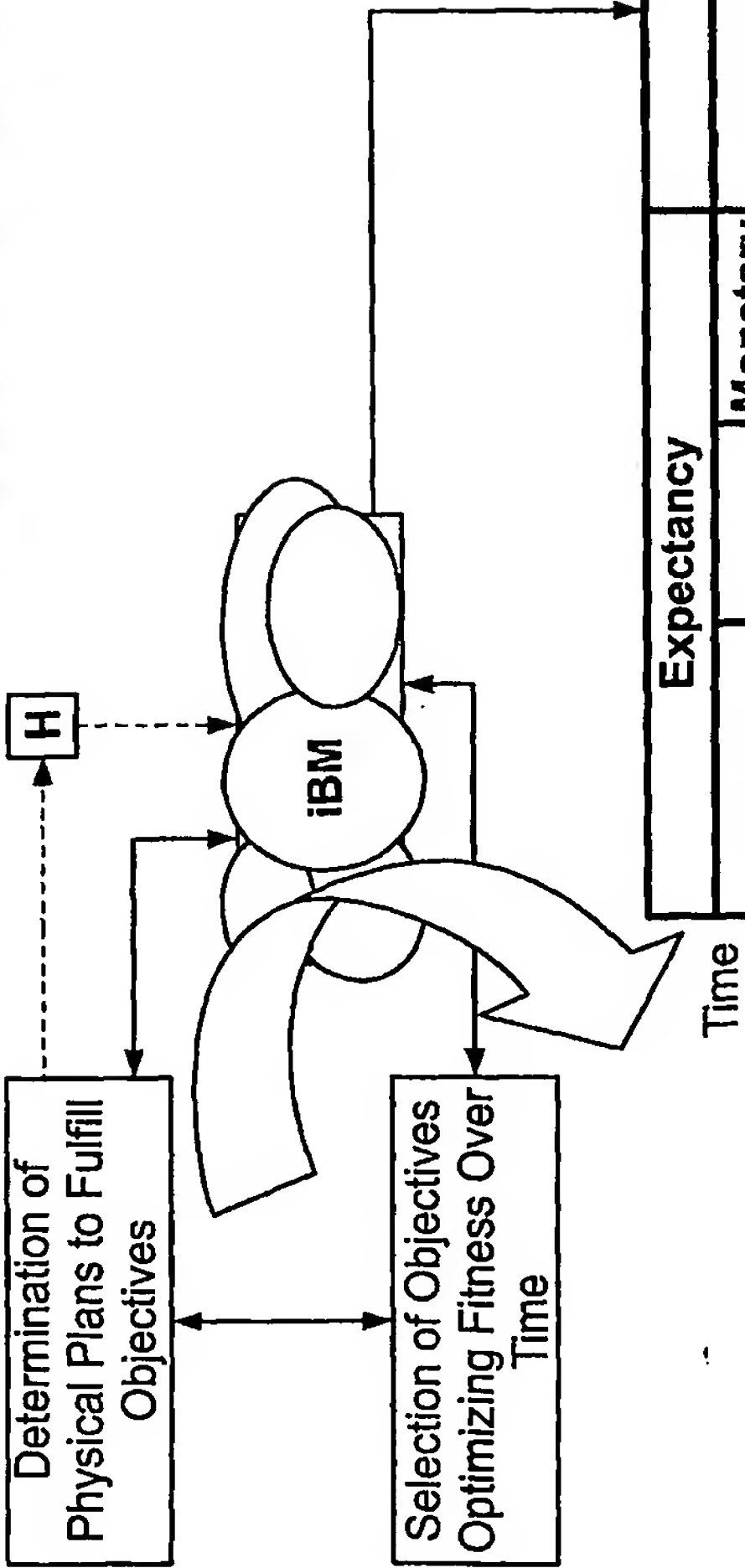


FIG. 11

Systems Biology Map



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Expectancy			Outcomes				
Region	Cocaine	Monetary Reward	Region	Cocaine	Monetary Reward	Beauty	Pain
GOb	R		GOb	(1) X (2) X	X ³	(+) (-) X ²	(+) (-) X ²
NAC	L R	X ² X	NAC	X X	X	X (X)	X X
SLEA	L R	X X	SLEA	X (X) X	X	X (X)	X X
Amygdala	R		Amygdala	X (X) X	X	X	(X)
VT	L R	X	VT	X X	X	(X) X	X X

FIG. 12

Circuit-Based Differences Allude
to Endophenotype Variations in Functional Illness

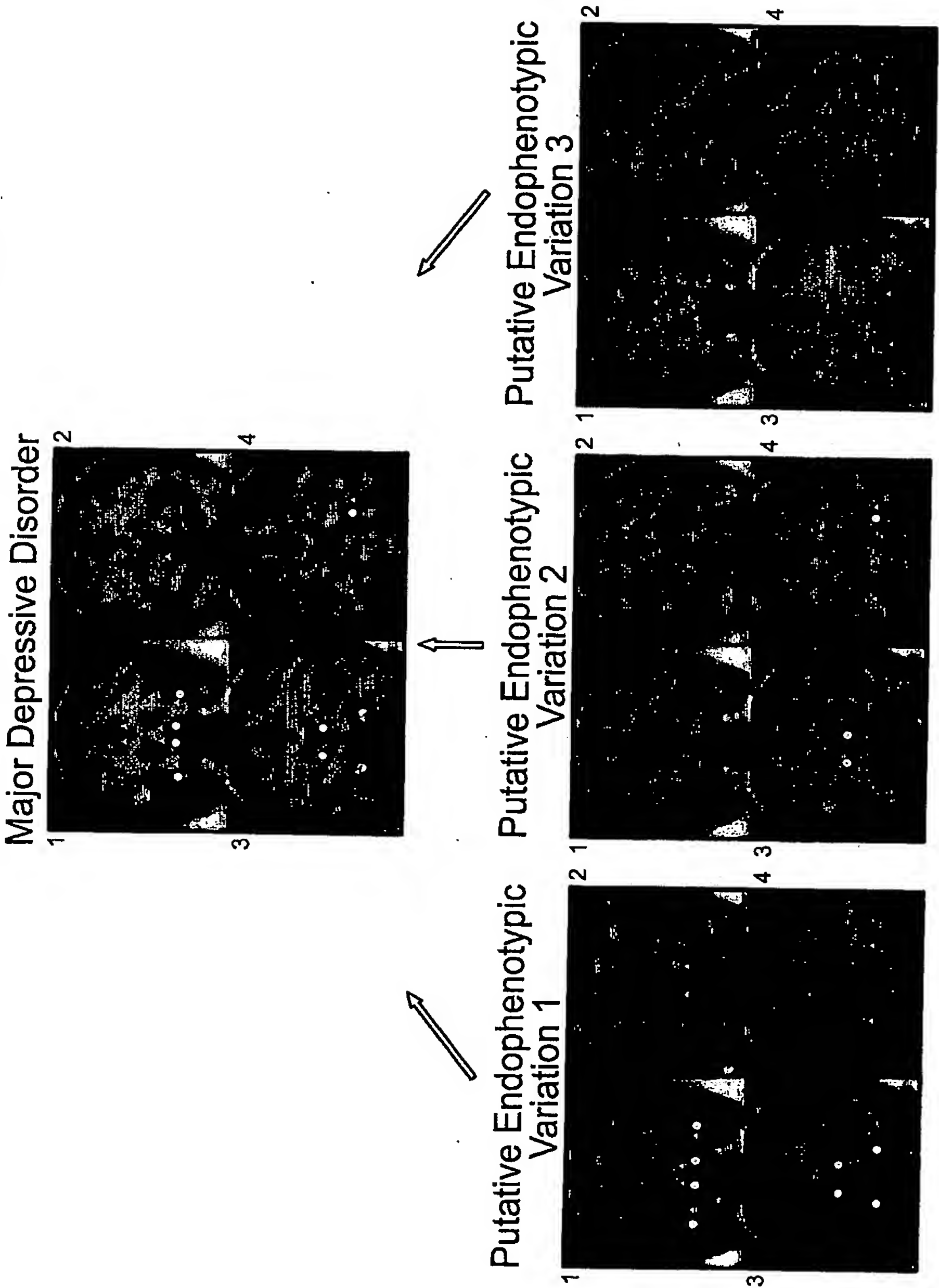


FIG. 13

Reward-Aversion Circuitry & Functional Illness

(2) Major Depressive Disorder

(1) Anxiety Disorders

(3) Addiction

(4) Behavioral Disorders (ex., OCD)

(5) Schizophrenia (Negative Sx)

FIG. 14

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Top-Down Approach (Phenotype to Genotype):

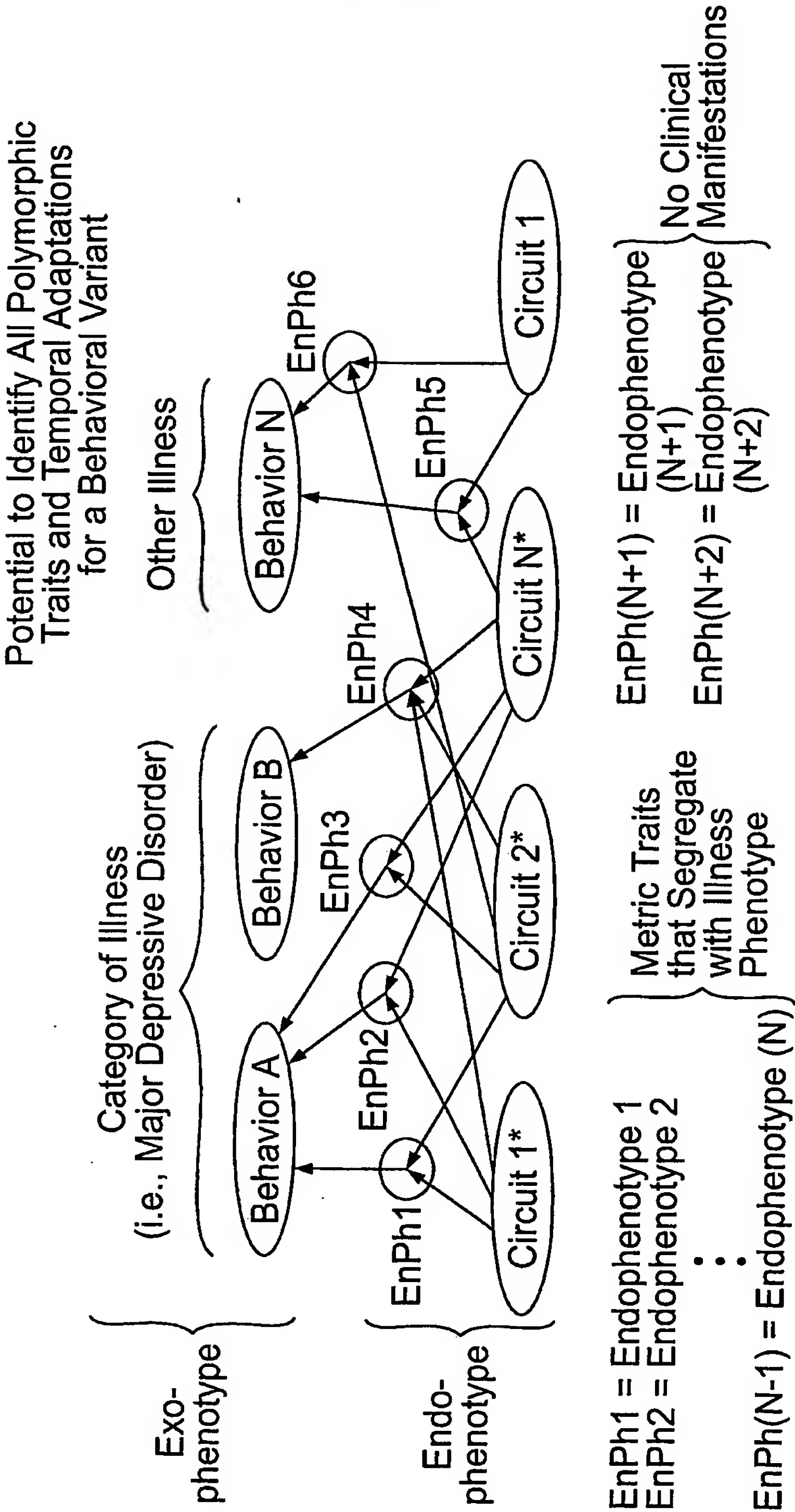


FIG. 15

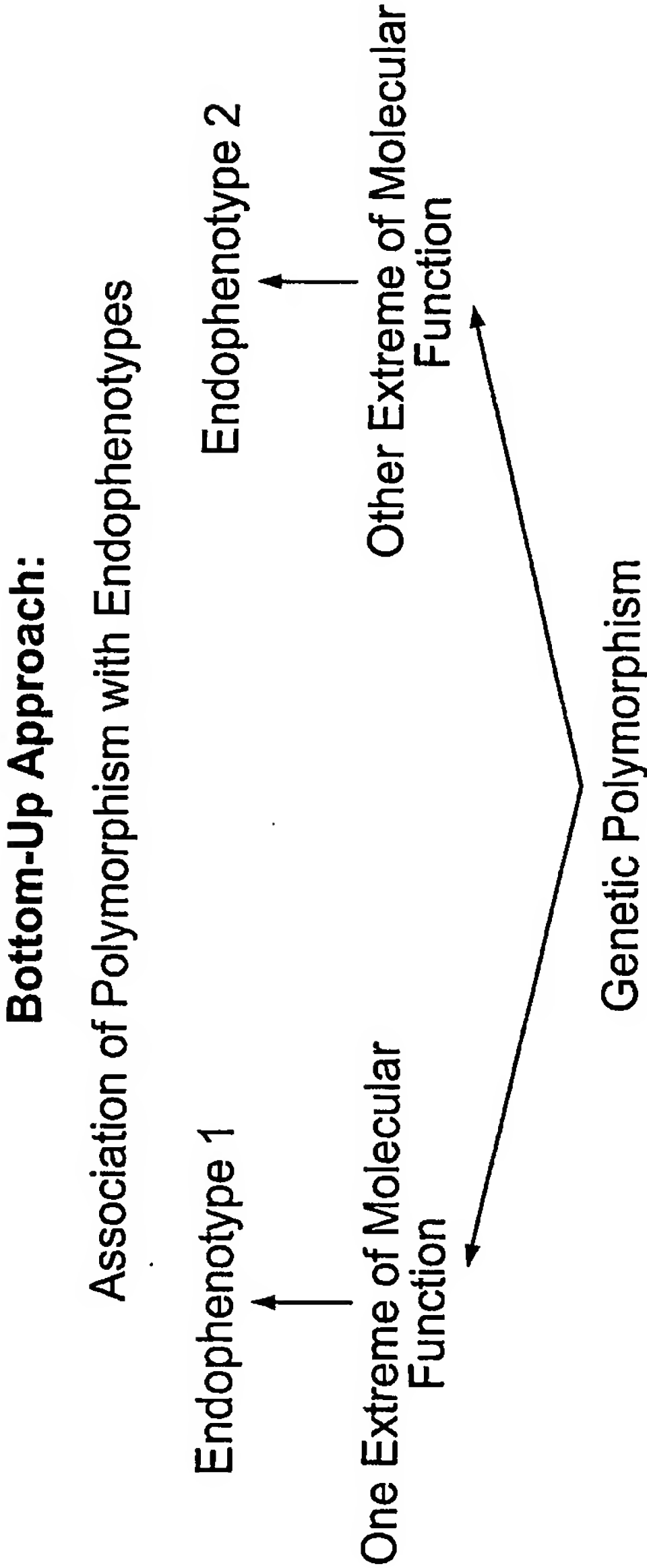


FIG. 16

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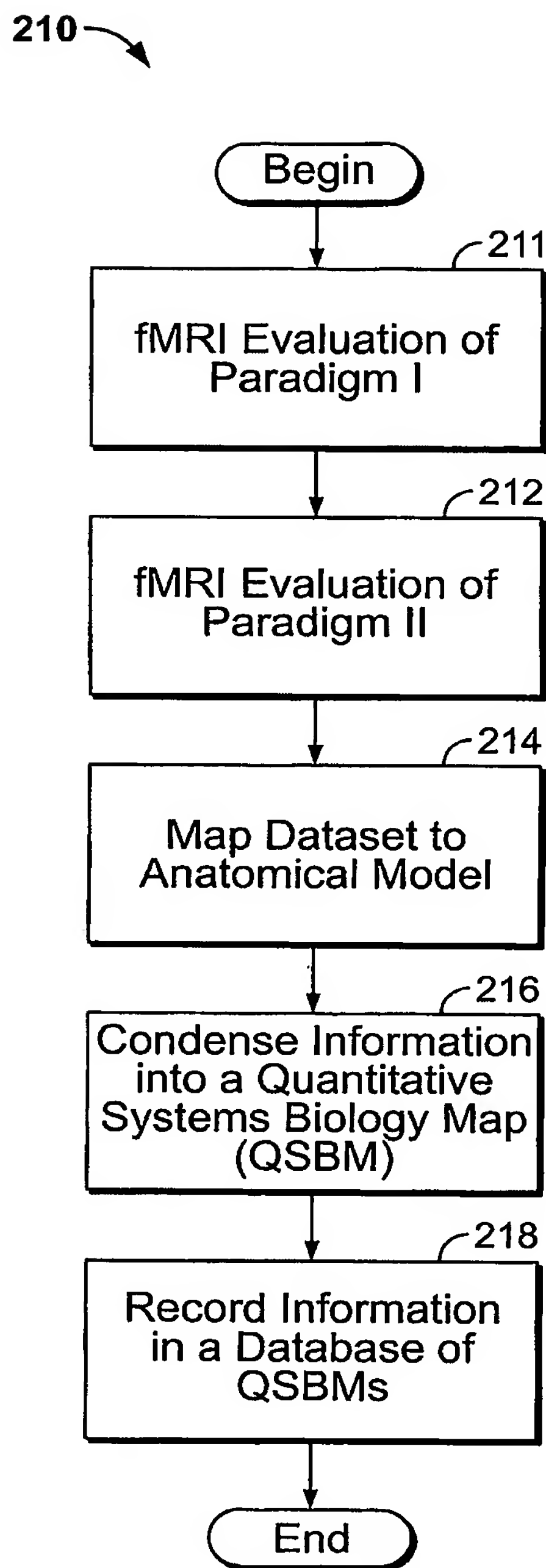


FIG. 17

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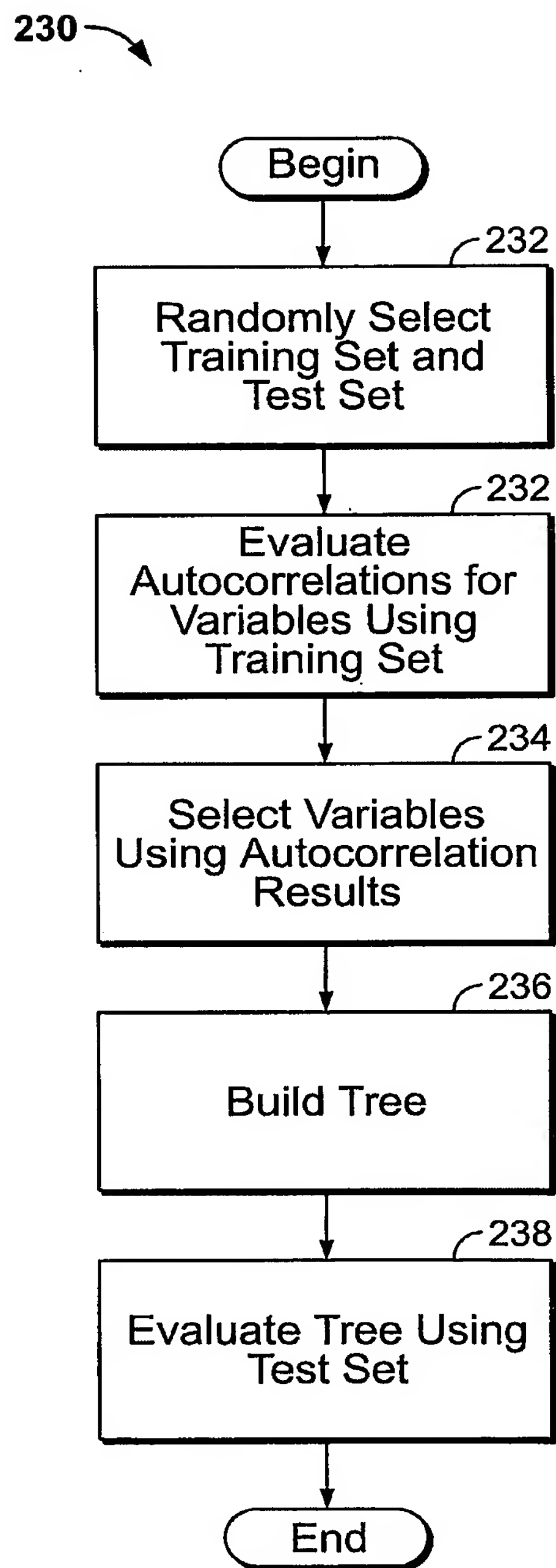


FIG. 18

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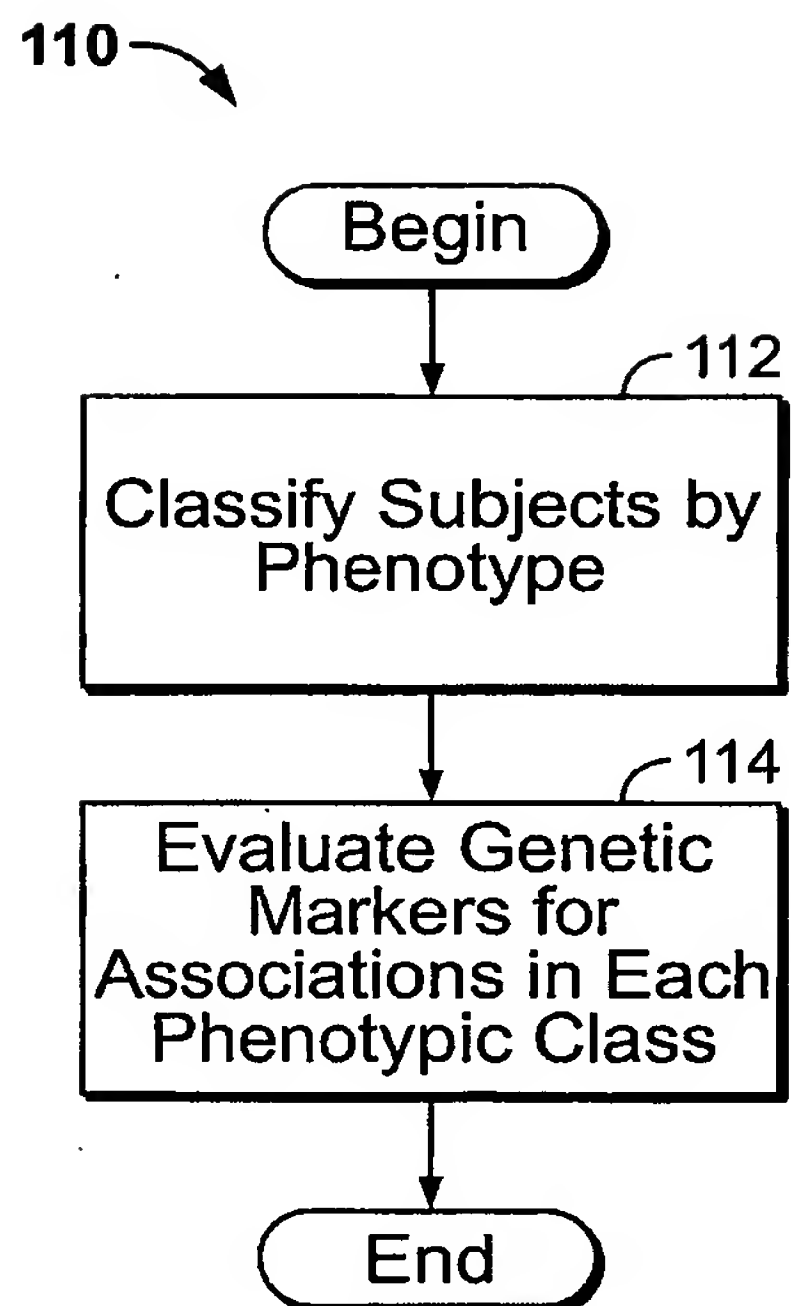


FIG. 19A

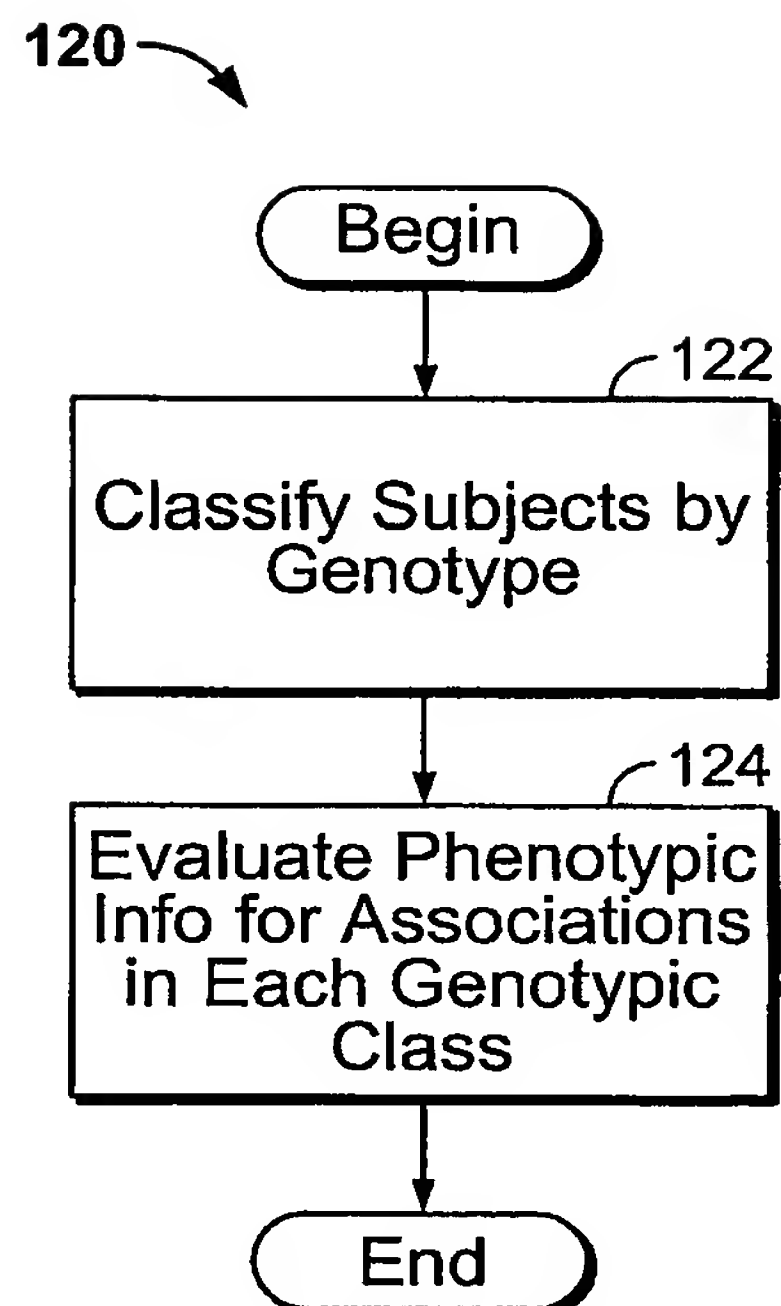


FIG. 19B

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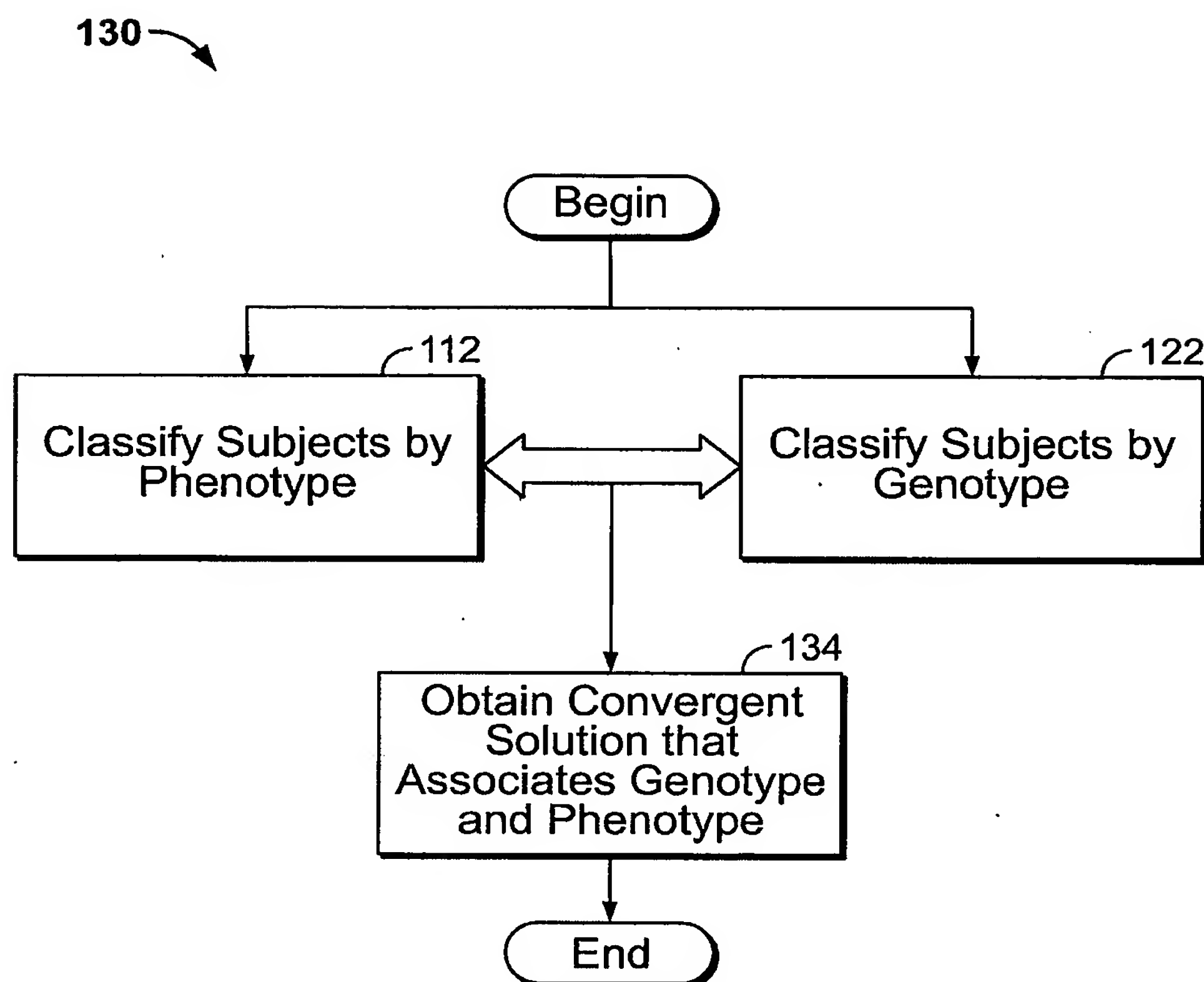


FIG. 19C

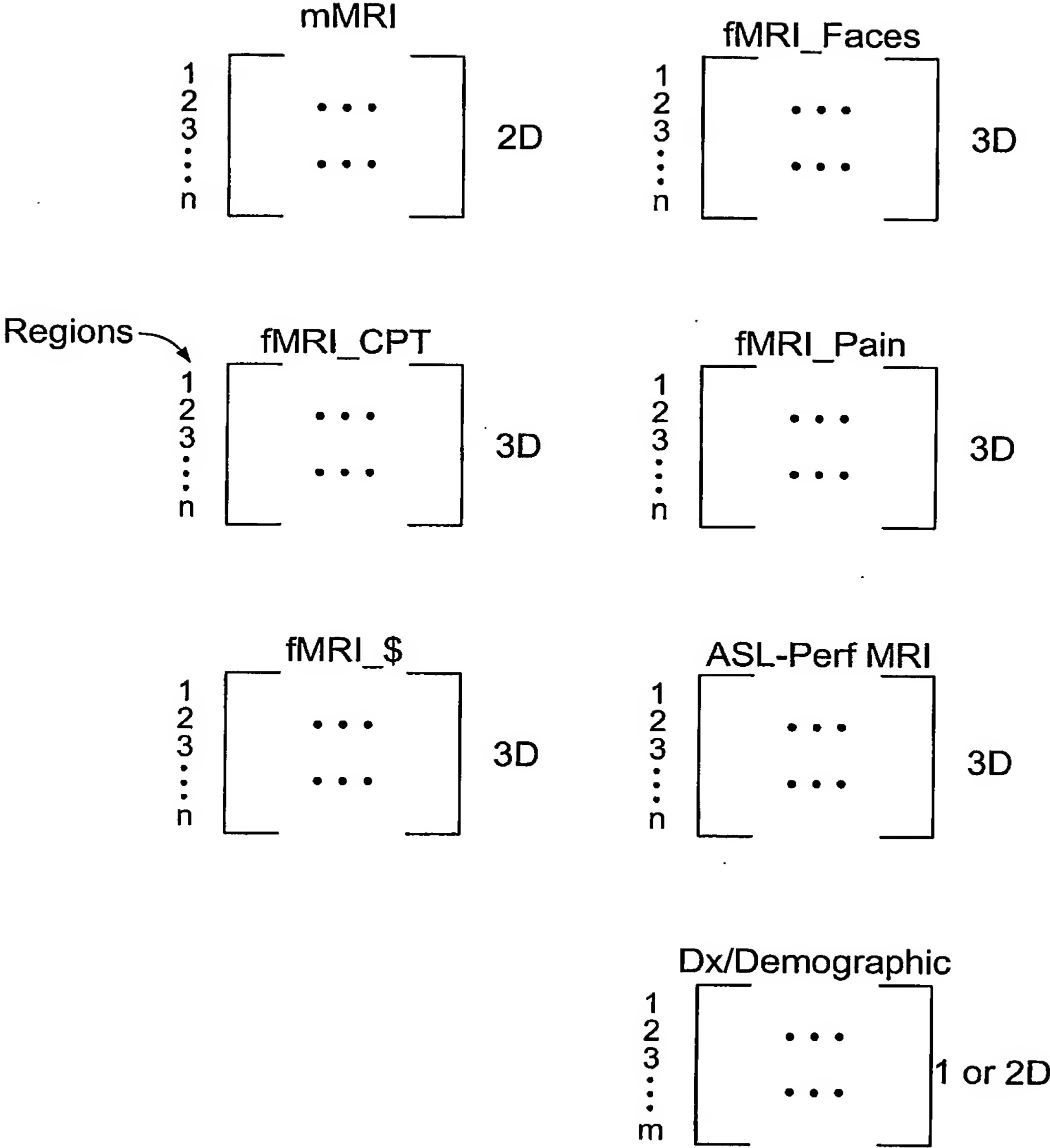


FIG. 20

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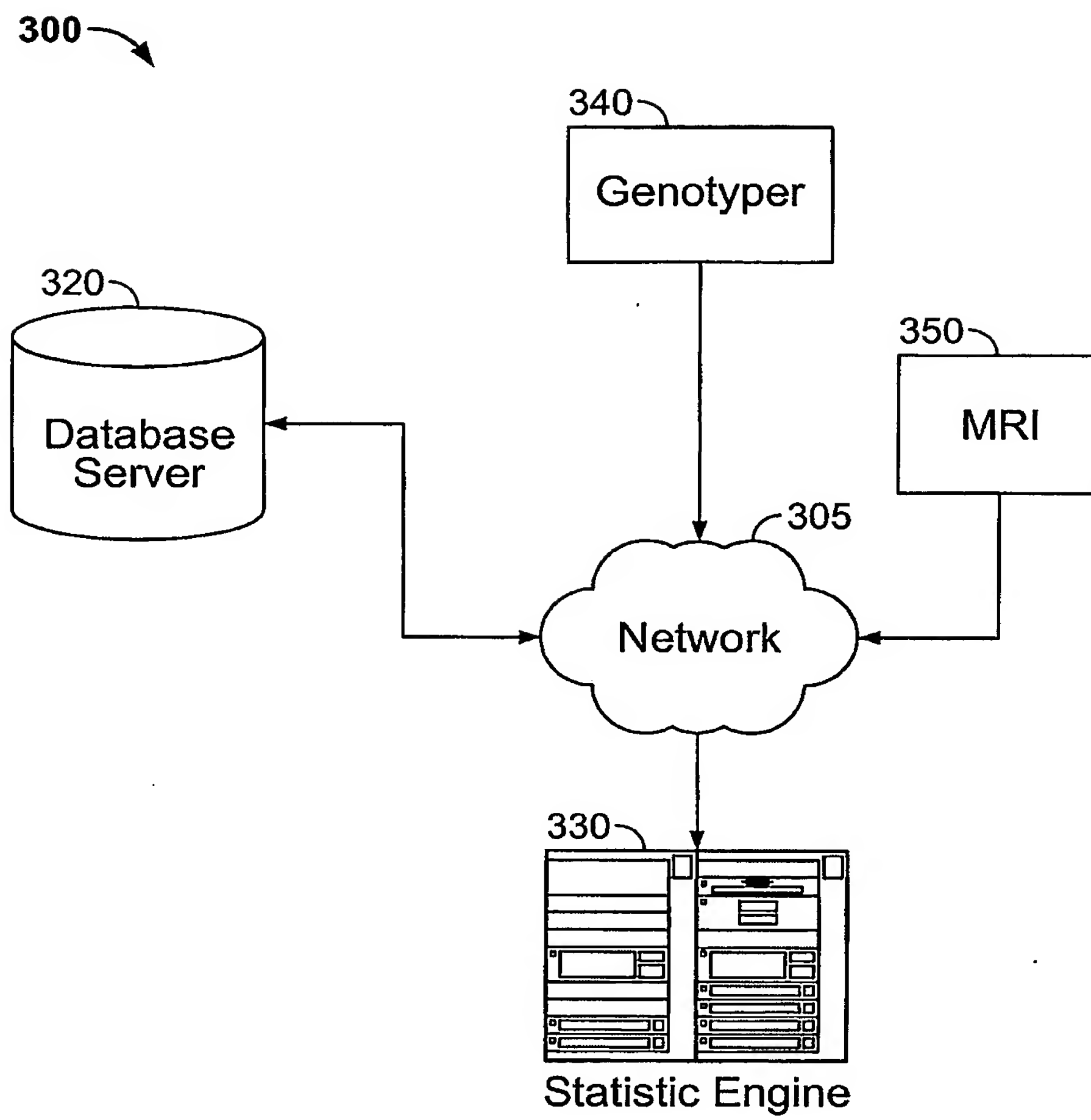


FIG. 21

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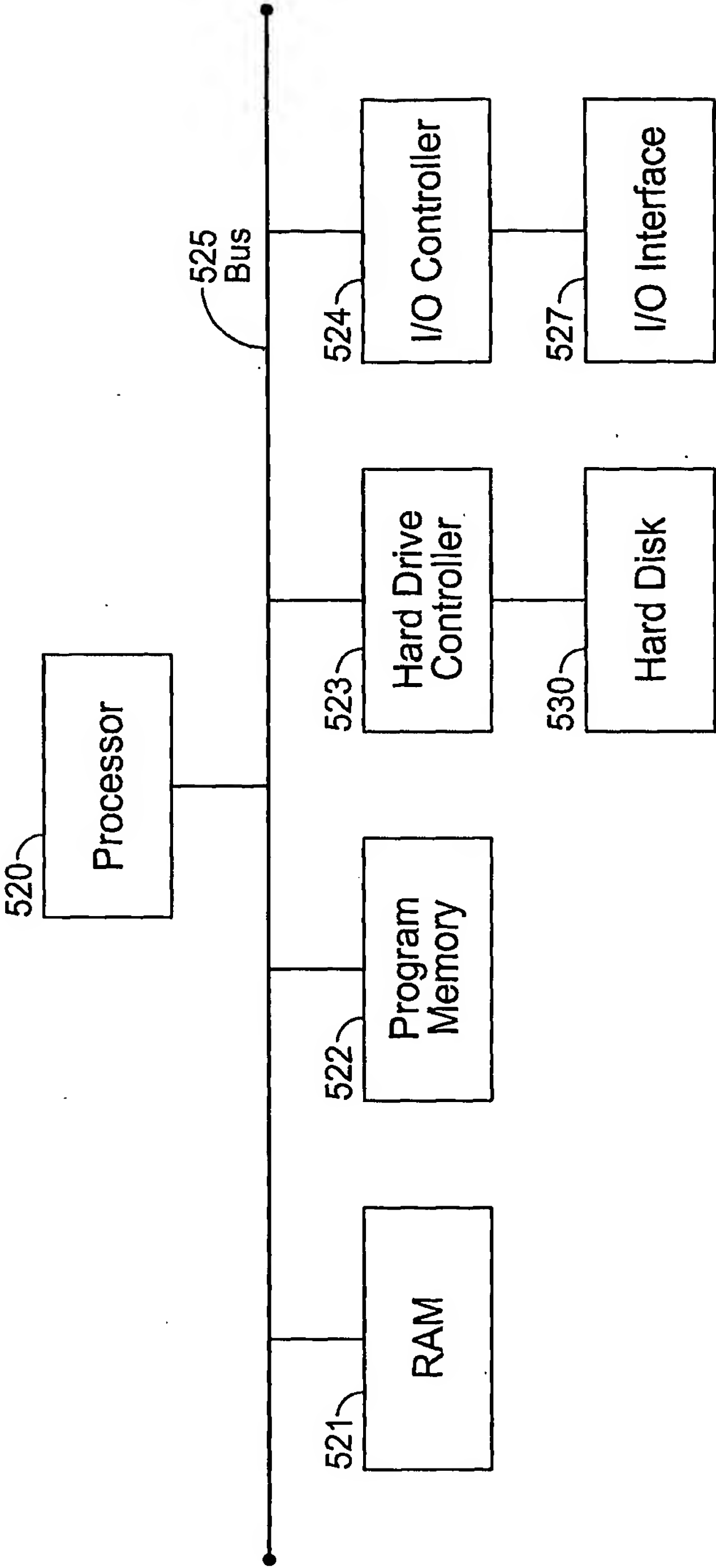


FIG. 22

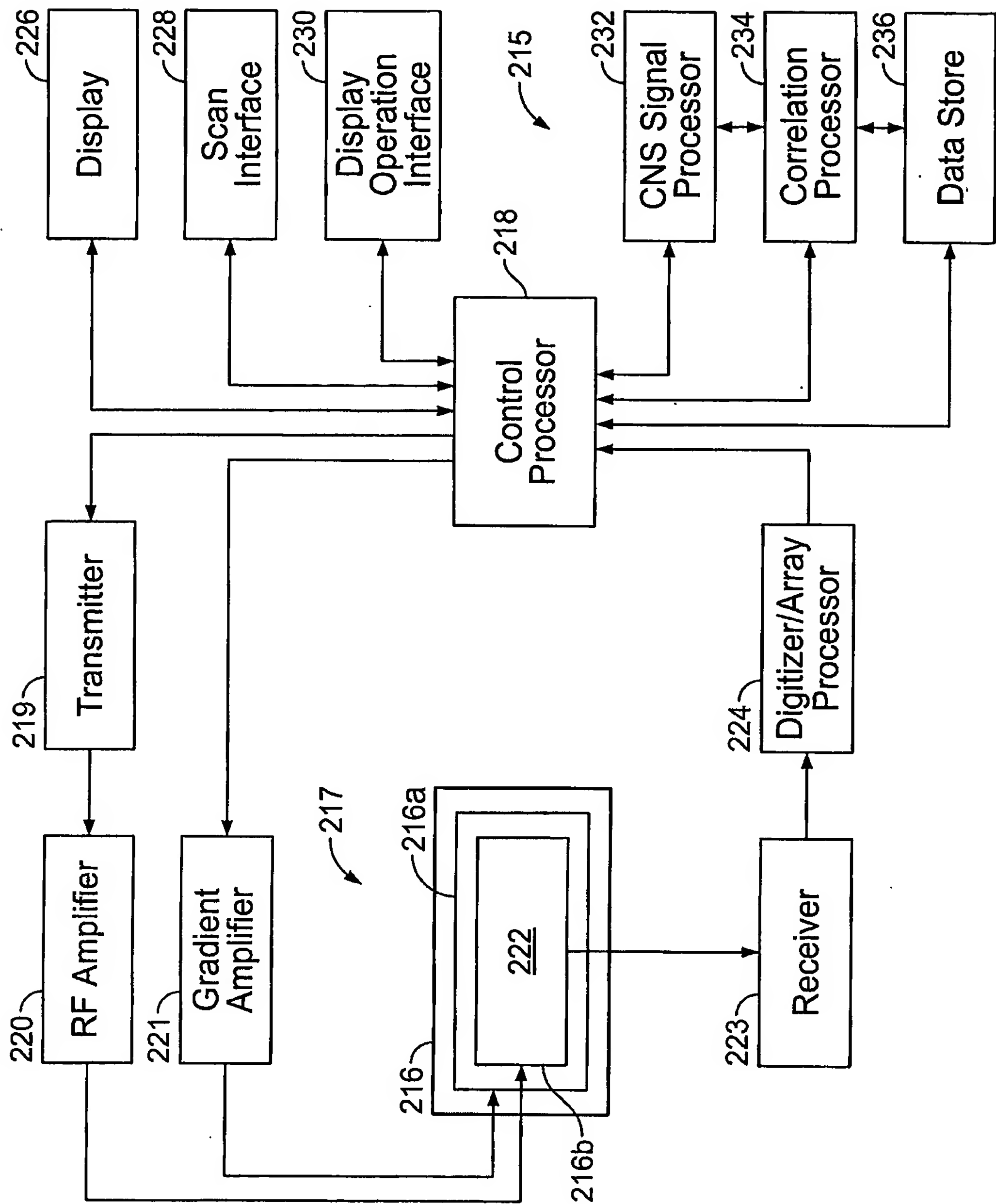


FIG. 23

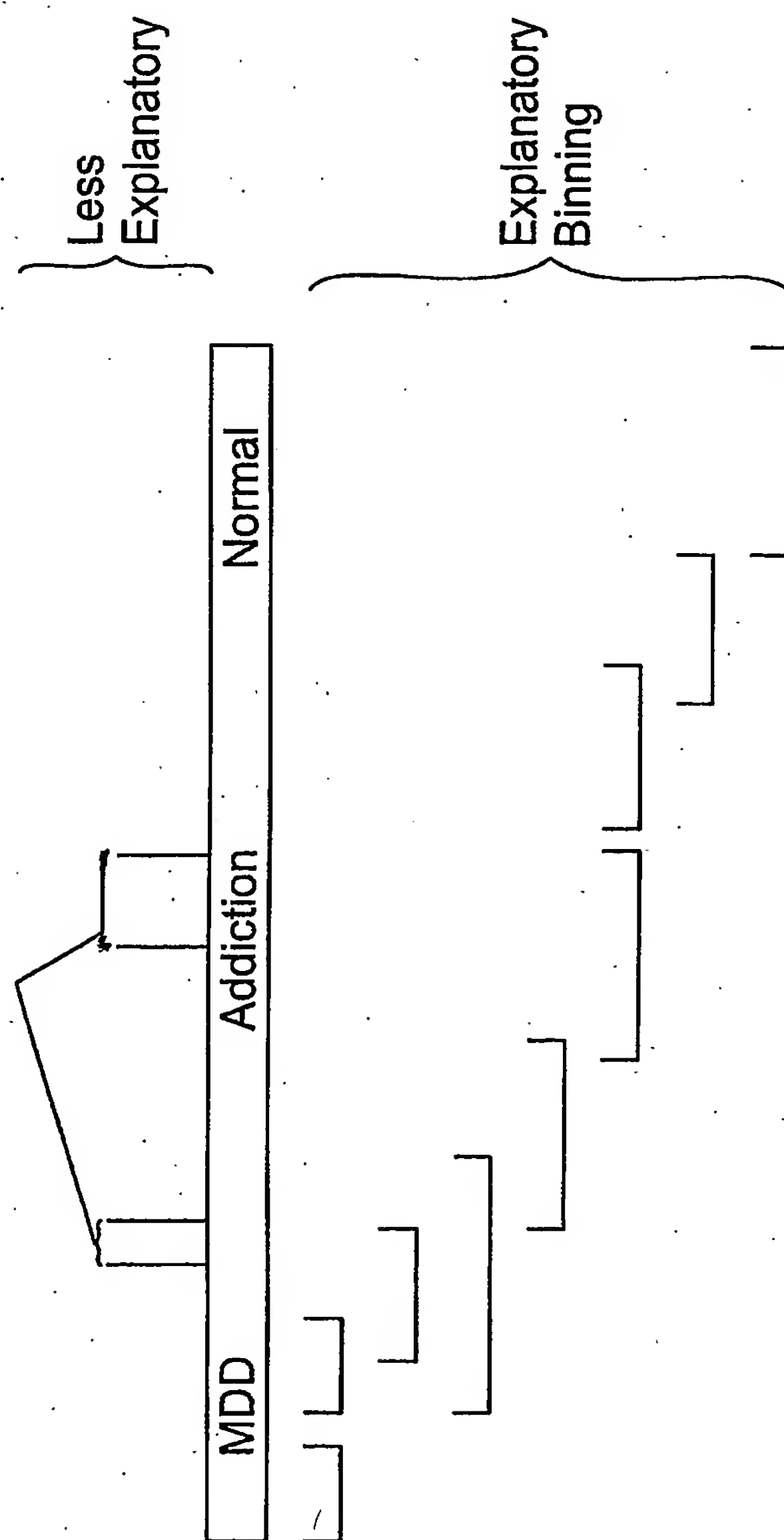


FIG. 24

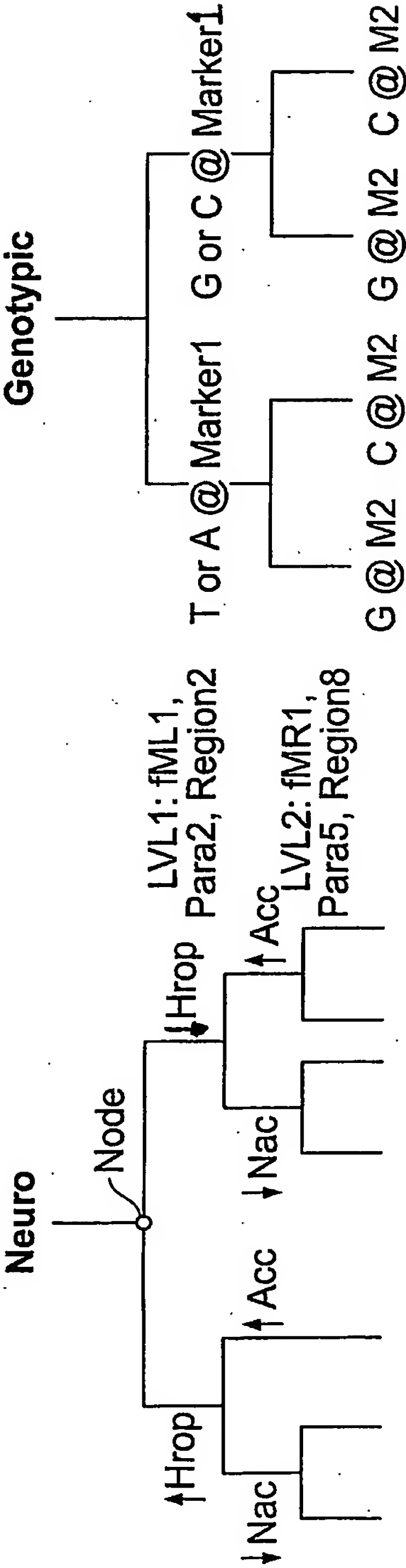


FIG. 25